



EBERLINE SERVICES

0060082

July 2, 2003

Mr. Steve Trent
Fluor Hanford Inc.
825 Jadwin Avenue
Richland, WA 99352



Reference: P.O. #630
Eberline Services R3-05-091-7517, SDG H2208

Dear Mr. Trent:

Enclosed is the data report for three solid samples designated under SAF No. F03-006 received at Eberline Services on May 14, 2003. The samples were analyzed according to the accompanying chain-of-custody documents.

Please call if you have any questions concerning this report.

Sincerely,

Melissa C. Mannion
Program Manager

MCM

Enclosure: Data Package

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EDMC

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1.0 GENERAL

Fluor Hanford Inc. (FH) Sample Delivery Group H2208 was composed of three solid (soil) samples designated under SAF No. F03-006 with a Project Designations of: 200-PW-2/200-PW-4 OU – Borehole Soil Sampling.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist.

2.0 ANALYSIS NOTES

2.1 Tritium Analyses

There was activity in the method blank (0.336 pCi/g). The activity was significantly below the RDL (400 pCi/g) for H3. No other problems were encountered during the course of the analyses.

2.2 Carbon-14 Analyses

No problems were encountered during the course of the analyses.

2.3 Nickel-63 Analyses

No problems were encountered during the course of the analyses.

2.4 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.5 Technetium-99 Analyses

No problems were encountered during the course of the analyses.

2.6 Iodine-129 Analyses

No problems were encountered during the course of the analyses.

2.7 Isotopic Thorium Analyses

No problems were encountered during the course of the analyses.

2.8 Isotopic Uranium Analyses

The U-238 LCS percent recovery (81%) was below the 3σ limits (83 to 117%), but was within the laboratory protocol limits (80 to 120%). No other problems were encountered during the course of the analyses.

2.9 Total Uranium Analyses

No problems were encountered during the course of the analyses.

2.10 Neptunium-237 Analyses

No problems were encountered during the course of the analyses.

2.11 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.12 Americium-241 Analyses

No problems were encountered during the course of the analyses.

2.13 Gamma Spectroscopy Analyses

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

"I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data obtained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."



Melissa C. Mannion
Program Manager



Date

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2208

SDG 7517
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG_H2208

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Melissa Mannion
Prepared by

Melissa Mannion
Reviewed by

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-TOC
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Report date 07/02/03

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2208

SDG 7517
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2208

ABOUT THE DATA SUMMARY SECTION

The Data Summary Section of a Data Package has all data, in several useful orders, necessary for first level, routine review of the data package for a Sample Delivery Group (SDG). This section follows the Data Package Narrative, which has an overview of the data package and a discussion of special problems. It is followed by the Raw Data Section, which has full details.

The Data Summary Section has several groups of reports:

SAMPLE SUMMARIES

The Sample and QC Summary Reports show all samples, including QC samples, reported in one SDG. These reports cross-reference client and lab sample identifiers.

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches (lab groupings reflecting how work was organized) relevant to the reported SDG with information necessary to check the completeness and consistency of the SDG.

WORK SUMMARY

The Work Summary Report shows all samples and work done on them relevant to the reported SDG.

METHOD BLANKS

The Method Blank Reports, one for each Method Blank relevant to the SDG, show all results and primary supporting information for the blanks.

LAB CONTROL SAMPLES

The Lab Control Sample Reports, one for each Lab Control Sample relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

REPORT GUIDES

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SAMPLE DELIVERY GROUP H2208

SDG 7517
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H2208

ABOUT THE DATA SUMMARY SECTION

DUPLICATES

The Duplicate Reports, one for each Duplicate and Original sample pair relevant to the SDG, show all results, differences and primary supporting information for these QC samples.

MATRIX SPIKES

The Matrix Spike Reports, one for each Spiked and Original sample pair relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

DATA SHEETS

The Data Sheet Reports, one for each client sample in the SDG, show all results and primary supporting information for these samples.

METHOD SUMMARIES

The Method Summary Reports, one for each test used in the SDG, show all results, QC and method performance data for one analyte on one or two pages. (A test is a short code for the method used to do certain work to the client's specification.)

REPORT GUIDES

The Report Guides, one for each of the above groups of reports, have documentation on how to read the associated reports.

REPORT GUIDES

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EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H2208

SDG 7517
Contact Melissa C. Mannion

LAB SAMPLE SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2208

LAB SAMPLE ID	CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	SAF NO	CHAIN OF CUSTODY	COLLECTED
R305091-01	B16WB3	216-A-37 (C4106)	SOLID		F02-006	F03-006-86	05/07/03 10:50
R305091-02	B16WB9	216-A-37 (C4106)	SOLID		F02-006	F03-006-72	05/08/03 10:25
R305091-03	B16WB4	216-A-37 (C4106)	SOLID		F02-006	F03-006-87	05/08/03 10:25
R305091-04	Lab Control Sample		SOLID		F02-006		
R305091-05	Method Blank		SOLID		F02-006		
R305091-06	Duplicate (R305091-01)	216-A-37 (C4106)	SOLID		F02-006		05/07/03 10:50
R305091-07	Duplicate (R305091-02)	216-A-37 (C4106)	SOLID		F02-006		05/08/03 10:25
R305091-08	Spike (R305091-02)	216-A-37 (C4106)	SOLID		F02-006		05/08/03 10:25

LAB SUMMARY

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2208

SDG 7517

Contact Melissa C. Mannion

QC SUMMARY

Client Hanford

Contract No. 630

Case no SDG H2208

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	LAB COLL SAMPLE ID	DEPARTMENT SAMPLE ID
7517	F03-006-72	B16WB9	SOLID	96.5	184.7 g		05/14/03 6	R305091-02	7517-002
	F03-006-86	B16WB3	SOLID	98.5	757.2 g		05/14/03 7	R305091-01	7517-001
	F03-006-87	B16WB4	SOLID	96.8	877.2 g		05/14/03 6	R305091-03	7517-003
		Method Blank	SOLID					R305091-05	7517-005
		Lab Control Sample	SOLID					R305091-04	7517-004
		Duplicate (R305091-01)	SOLID	98.5	757.2 g		05/14/03 7	R305091-06	7517-006
		Duplicate (R305091-02)	SOLID	96.5	184.7 g		05/14/03 6	R305091-07	7517-007
		Spike (R305091-02)	SOLID	96.8	184.7 g		05/14/03 6	R305091-08	7517-008

QC SUMMARY

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SAMPLE DELIVERY GROUP H2208

SDG 7517
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2208

TEST	MATRIX	METHOD	PREPARATION	ERROR	PLANCHETS ANALYZED				QUALI-		
			BATCH	2σ %	CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG
Alpha Spectroscopy											
AM	SOLID	Americium 241 in Soil	7060-198	5.0	2			1	1	1/1	
NP	SOLID	Neptunium in Soil	7060-198	5.0	1			1	1	1/1	
PU	SOLID	Plutonium, Isotopic in Solids	7060-198	5.0	2			1	1	1/1	
TH	SOLID	Thorium, Isotopic in Soil	7060-198	5.0	1			1	1	1/1	
U	SOLID	Uranium, Isotopic in Soil	7060-198	5.0	2			1	1	1/1	
Beta Counting											
SR	SOLID	Total Strontium in Soil	7060-198	10.0	1			1	1	1/1	
TC	SOLID	Technetium 99 in Soil	7060-198	10.0	1			1	1	1/1	
Gamma Spectroscopy											
GAM	SOLID	Gamma Scan	7060-198	15.0	2			1	1	1/1	
I	SOLID	Iodine 129 in Soil	7060-198	10.0	1			1	1	1/1	
Kinetic Phosphorimetry (KPA)											
U_T	SOLID	Uranium, Total in Soil	7060-198	9.0	2			1	1	1/1	
Liquid Scintillation Counting											
C	SOLID	Carbon 14 in Soil	7060-198	10.0	1			1	1	1/1	
H	SOLID	Tritium in Soil	7060-198	10.0	1			1	1	1/1	1/1 X
NI_L	SOLID	Nickel 63 in Soil	7060-198	10.0	1			1	1	1/1	

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.

Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

PREP BATCH SUMMARY

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SAMPLE DELIVERY GROUP H2208

SDG 7517
Contact Melissa C. Mannion

LAB WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2208

LAB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF- FIX	ANALYZED	REVIEWED	BY	METHOD
R305091-01	B16WB3			7517-001	AM		06/11/03	07/02/03	MCM	Americium 241 in Soil
05/07/03	216-A-37 (C4106)		SOLID	7517-001	GAM		06/03/03	07/02/03	MCM	Gamma Scan
05/14/03	F03-006-86	F02-006		7517-001	PU		06/10/03	07/02/03	MCM	Plutonium, Isotopic in Solids
				7517-001	U		06/18/03	07/02/03	MCM	Uranium, Isotopic in Soil
				7517-001	U_T		06/09/03	07/02/03	MCM	Uranium, Total in Soil
R305091-02	B16WB9			7517-002	C		06/24/03	07/02/03	MCM	Carbon 14 in Soil
05/08/03	216-A-37 (C4106)		SOLID	7517-002	H		06/22/03	07/02/03	MCM	Tritium in Soil
05/14/03	F03-006-72	F02-006		7517-002	I		06/21/03	07/02/03	MCM	Iodine 129 in Soil
				7517-002	NI_L		06/13/03	07/02/03	MCM	Nickel 63 in Soil
				7517-002	NP		06/19/03	07/02/03	MCM	Neptunium in Soil
				7517-002	SR		06/10/03	07/02/03	MCM	Total Strontium in Soil
				7517-002	TC		06/29/03	07/02/03	MCM	Technetium 99 in Soil
				7517-002	TH		06/19/03	07/02/03	MCM	Thorium, Isotopic in Soil
R305091-03	B16WB4			7517-003	AM		06/11/03	07/02/03	MCM	Americium 241 in Soil
05/08/03	216-A-37 (C4106)		SOLID	7517-003	GAM		06/04/03	07/02/03	MCM	Gamma Scan
05/14/03	F03-006-87	F02-006		7517-003	PU		06/10/03	07/02/03	MCM	Plutonium, Isotopic in Solids
				7517-003	U		06/18/03	07/02/03	MCM	Uranium, Isotopic in Soil
				7517-003	U_T		06/09/03	07/02/03	MCM	Uranium, Total in Soil
R305091-04	Lab Control Sample			7517-004	AM		06/11/03	07/02/03	MCM	Americium 241 in Soil
			SOLID	7517-004	C		06/25/03	07/02/03	MCM	Carbon 14 in Soil
		F02-006		7517-004	GAM		06/04/03	07/02/03	MCM	Gamma Scan
				7517-004	H		06/22/03	07/02/03	MCM	Tritium in Soil
				7517-004	I		06/22/03	07/02/03	MCM	Iodine 129 in Soil
				7517-004	NI_L		06/13/03	07/02/03	MCM	Nickel 63 in Soil
				7517-004	NP		06/19/03	07/02/03	MCM	Neptunium in Soil
				7517-004	PU		06/10/03	07/02/03	MCM	Plutonium, Isotopic in Solids
				7517-004	SR		06/10/03	07/02/03	MCM	Total Strontium in Soil
				7517-004	TC		06/27/03	07/02/03	MCM	Technetium 99 in Soil
				7517-004	TH		06/19/03	07/02/03	MCM	Thorium, Isotopic in Soil
				7517-004	U		06/18/03	07/02/03	MCM	Uranium, Isotopic in Soil
				7517-004	U_T		06/09/03	07/02/03	MCM	Uranium, Total in Soil

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Version 3.06
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2208

SDG 7517

Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client HanfordContract No. 630Case no SDG H2208

LAB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF- FIX	ANALYZED	REVIEWED	BY	METHOD
R305091-05	Method Blank			7517-005	AM		06/11/03	07/02/03	MCM	Americium 241 in Soil
			SOLID	7517-005	C		06/24/03	07/02/03	MCM	Carbon 14 in Soil
		F02-006		7517-005	GAM		06/04/03	07/02/03	MCM	Gamma Scan
				7517-005	H		06/22/03	07/02/03	MCM	Tritium in Soil
				7517-005	I		06/22/03	07/02/03	MCM	Iodine 129 in Soil
				7517-005	NI_L		06/13/03	07/02/03	MCM	Nickel 63 in Soil
				7517-005	NP		06/19/03	07/02/03	MCM	Neptunium in Soil
				7517-005	PU		06/10/03	07/02/03	MCM	Plutonium, Isotopic in Solids
				7517-005	SR		06/10/03	07/02/03	MCM	Total Strontium in Soil
				7517-005	TC		06/28/03	07/02/03	MCM	Technetium 99 in Soil
				7517-005	TH		06/19/03	07/02/03	MCM	Thorium, Isotopic in Soil
				7517-005	U		06/18/03	07/02/03	MCM	Uranium, Isotopic in Soil
				7517-005	U_T		06/09/03	07/02/03	MCM	Uranium, Total in Soil
R305091-06	Duplicate (R305091-01)			7517-006	AM		06/11/03	07/02/03	MCM	Americium 241 in Soil
05/07/03	216-A-37 (C4106)		SOLID	7517-006	GAM		06/04/03	07/02/03	MCM	Gamma Scan
05/14/03		F02-006		7517-006	PU		06/10/03	07/02/03	MCM	Plutonium, Isotopic in Solids
				7517-006	U		06/18/03	07/02/03	MCM	Uranium, Isotopic in Soil
				7517-006	U_T		06/09/03	07/02/03	MCM	Uranium, Total in Soil
R305091-07	Duplicate (R305091-02)			7517-007	C		06/24/03	07/02/03	MCM	Carbon 14 in Soil
05/08/03	216-A-37 (C4106)		SOLID	7517-007	H		06/22/03	07/02/03	MCM	Tritium in Soil
05/14/03		F02-006		7517-007	I		06/23/03	07/02/03	MCM	Iodine 129 in Soil
				7517-007	NI_L		06/13/03	07/02/03	MCM	Nickel 63 in Soil
				7517-007	NP		06/19/03	07/02/03	MCM	Neptunium in Soil
				7517-007	SR		06/10/03	07/02/03	MCM	Total Strontium in Soil
				7517-007	TC		06/27/03	07/02/03	MCM	Technetium 99 in Soil
				7517-007	TH		06/19/03	07/02/03	MCM	Thorium, Isotopic in Soil
R305091-08	Spike (R305091-02)			7517-008	H		06/22/03	07/02/03	MCM	Tritium in Soil
05/08/03	216-A-37 (C4106)		SOLID							
05/14/03		F02-006								

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SAMPLE DELIVERY GROUP H2208

SDG 7517

Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford

Contract No. 630

Case no SDG H2208

COUNTS OF TESTS BY SAMPLE TYPE

COUNTS OF TESTS BY SAMPLE TYPE											
TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL	
AM	F02-006	Americium 241 in Soil	AMCMISO_IE_PLATE_AEA	2			1	1	1	5	
C	F02-006	Carbon 14 in Soil	C14_COX_LSC	1			1	1	1	4	
GAM	F02-006	Gamma Scan	GAMMA_GS	2			1	1	1	5	
H	F02-006	Tritium in Soil	906.0_H3_LSC	1			1	1	1	5	
I	F02-006	Iodine 129 in Soil	I129_SEP_LEPS_GS	1			1	1	1	4	
NI_L	F02-006	Nickel 63 in Soil	NI63_LSC	1			1	1	1	4	
NP	F02-006	Neptunium in Soil	NP237_LLE_PLATE_AEA	1			1	1	1	4	
PU	F02-006	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	2			1	1	1	5	
SR	F02-006	Total Strontium in Soil	SRTOT_SEP_PRECIP_GPC	1			1	1	1	4	
TC	F02-006	Technetium 99 in Soil	TC99_TR_SEP_LSC	1			1	1	1	4	
TH	F02-006	Thorium, Isotopic in Soil	THISO_IE_PLATE_AEA	1			1	1	1	4	
U	F02-006	Uranium, Isotopic in Soil	UIISO_PLATE_AEA	2			1	1	1	5	
U_T	F02-006	Uranium, Total in Soil	UTOT_KPA	2			1	1	1	5	
TOTALS				18			13	13	13	1	58

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EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2208

7517-005

Method Blank

METHOD BLANK

SDG <u>7517</u>	Client/Case no <u>Hanford</u>	SDG <u>H2208</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R305091-05</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7517-005</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>F02-006</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	0.336	0.17	0.27	400		H
Carbon 14	14762-75-5	-1.45	1.9	3.2	50	U	C
Nickel 63	13981-37-8	0.382	1.2	2.0	30	U	NI_L
Total Strontium	SR-RAD	0.006	0.14	0.29	1.0	U	SR
Technetium 99	14133-76-7	0.149	0.28	0.58	15	U	TC
Thorium 228	14274-82-9	0.059	0.12	0.28		U	TH
Thorium 230	14269-63-7	0.147	0.18	0.23	1.0	U	TH
Thorium 232	TH-232	0	0.059	0.23	1.0	U	TH
Total Uranium (ug/g)	7440-61-1	0	0.001	0.003	1.0	U	U_T
Uranium 233/234	U-233/234	-0.028	0.056	0.21	1.0	U	U
Uranium 235	15117-96-1	0.034	0.068	0.26	1.0	U	U
Uranium 238	U-238	0	0.056	0.21	1.0	U	U
Neptunium 237	13994-20-2	0	0.078	0.12	1.0	U	NP
Plutonium 238	13981-16-3	-0.026	0.051	0.20	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.051	0.20	1.0	U	PU
Americium 241	14596-10-2	0	0.066	0.25	1.0	U	AM
Iodine 129	15046-84-1	0.352	0.56	1.3	2.0	U	I
Potassium 40	13966-00-2	U		0.63		U	GAM
Cobalt 60	10198-40-0	U		0.028	0.050	U	GAM
Antimony 125	14234-35-6	U		0.055		U	GAM
Tin 126	15832-50-5	U		0.042		U	GAM
Cesium 134	13967-70-9	U		0.027		U	GAM
Cesium 137	10045-97-3	U		0.024	0.10	U	GAM
Radium 226	13982-63-3	U		0.045		U	GAM
Radium 228	15262-20-1	U		0.10		U	GAM
Europium 152	14683-23-9	U		0.060	0.10	U	GAM
Europium 154	15585-10-1	U		0.075	0.10	U	GAM
Europium 155	14391-16-3	U		0.059	0.10	U	GAM
Thorium 228	14274-82-9	U		0.067		U	GAM

200-PW-2/200-PW-4 OU - Borehole Soil

METHOD BLANKS
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Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>07/02/03</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2208

7517-005

Method Blank

BLANK, cont.

SDG <u>7517</u>	Client/Case no <u>Hanford</u>	SDG <u>H2208</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R305091-05</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7517-005</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>F02-006</u>	

ANALYTE	CAS NO	RESULT pCi/g	2 σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Thorium 232	TH-232	U		0.10		U	GAM
Uranium 235	15117-96-1	U		0.095		U	GAM
Uranium 238	U-238	U		2.7		U	GAM
Americium 241	14596-10-2	U		0.11		U	GAM

200-PW-2/200-PW-4 OU - Borehole Soil

QC-BLANK #44789

SAMPLE DELIVERY GROUP H2208

Lab Control Sample

SDG <u>7517</u>	Client/Case no <u>Hanford</u>	SDG <u>H2208</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
Lab sample id <u>R305091-04</u>	Client sample id <u>Lab Control Sample</u>	
Dept sample id <u>7517-004</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>F02-006</u>	

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	13.0	0.42	0.28	400	B	H	13.0	0.52	100	83-117	80-120
Carbon 14	1820	37	9.7	50		C	1970	79	92	85-115	80-120
Nickel 63	214	4.6	2.3	30		NI_L	228	9.1	94	84-116	80-120
Total Strontium	23.0	0.56	0.19	1.0		SR	21.0	0.84	110	82-118	80-120
Technetium 99	114	2.7	0.52	15		TC	109	4.4	105	83-117	80-120
Thorium 230	39.5	3.7	0.30	1.0		TH	40.8	1.6	97	84-116	80-120
Total Uranium (ug/g)	17.1	1.9	0.032	1.0		U_T	16.5	0.66	104	77-123	80-120
Uranium 233/234	18.2	2.0	0.98	1.0		U	18.6	0.74	98	81-119	80-120
Uranium 235	13.9	1.7	0.27	1.0		U	15.1	0.60	92	81-119	80-120
Uranium 238	21.0	2.2	0.93	1.0		U	20.2	0.81	104	81-119	80-120
Neptunium 237	16.1	1.9	0.11	1.0		NP	19.9	0.80	81	83-117	80-120
Plutonium 238	25.1	2.4	0.20	1.0		PU	24.4	0.98	103	82-118	80-120
Plutonium 239/240	24.6	2.4	0.20	1.0		PU	26.4	1.1	93	83-117	80-120
Americium 241	20.6	2.4	0.27	1.0		AM	19.0	0.76	108	79-121	80-120
Iodine 129	121	1.2	1.4	2.0		I	116	4.6	104	83-117	80-120
Cobalt 60	0.992	0.070	0.044	0.050		GAM	1.03	0.041	96	75-125	80-120
Cesium 137	0.994	0.060	0.046	0.10		GAM	1.00	0.040	99	75-125	80-120

QC-LCS #44788

Lab id EBRLNE
Protocol Manford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 07/02/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2208

7517-006

B16WB3

DUPLICATE

SDG <u>7517</u>		Client/Case no <u>Hanford</u>		SDG <u>H2208</u>
Contact <u>Melissa C. Mannion</u>		Contract No. <u>630</u>		
DUPLICATE		ORIGINAL		
Lab sample id <u>R305091-06</u>	Lab sample id <u>R305091-01</u>	Client sample id <u>B16WB3</u>		
Dept sample id <u>7517-006</u>	Dept sample id <u>7517-001</u>	Location/Matrix <u>216-A-37 (C4106)</u> SOLID		
	Received <u>05/14/03</u>	Collected/Weight <u>05/07/03 10:50</u> <u>757.2 g</u>		
% solids <u>98.5</u>	% solids <u>98.5</u>	Custody/SAF No <u>F03-006-86</u> <u>F02-006</u>		

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI- FIERS	RPD %	3σ TOT	PROT LIMIT
Total Uranium (ug/g)	0.254	0.029	0.003	1.0		U_T	0.273	0.031	0.003		7	31	
Uranium 233/234	0.324	0.20	0.25	1.0		U	0.366	0.25	0.23		12	140	
Uranium 235	0.157	0.16	0.30	1.0	U	U	0	0.074	0.28	U	-		
Uranium 238	0.486	0.26	0.25	1.0		U	0.396	0.25	0.23		20	123	
Plutonium 238	0.407	0.27	0.26	1.0		PU	-0.030	0.12	0.29	U	200	203	
Plutonium 239/240	0	0.068	0.26	1.0	U	PU	0	0.060	0.23	U	-		
Americium 241	0.057	0.11	0.22	1.0	U	AM	0.055	0.11	0.21	U	-		
Potassium 40	8.71	0.45	0.22			GAM	8.04	0.58	0.34		8	34	
Cobalt 60	U		0.021	0.050	U	GAM	U		0.030	U	-		
Antimony 125	U		0.045		U	GAM	U		0.061	U	-		
Tin 126	U		0.033		U	GAM	U		0.047	U	-		
Cesium 134	U		0.028		U	GAM	U		0.037	U	-		
Cesium 137	U		0.019	0.10	U	GAM	U		0.027	U	-		
Radium 226	0.263	0.039	0.039			GAM	0.263	0.051	0.057		0	49	
Radium 228	0.371	0.090	0.091			GAM	0.381	0.13	0.14		3	71	
Europium 152	U		0.050	0.10	U	GAM	U		0.071	U	-		
Europium 154	U		0.077	0.10	U	GAM	U		0.11	U	-		
Europium 155	U		0.046	0.10	U	GAM	U		0.066	U	-		
Thorium 228	0.376	0.028	0.026			GAM	0.353	0.034	0.032		6	37	
Thorium 232	0.371	0.090	0.091			GAM	0.381	0.13	0.14		3	71	
Uranium 235	U		0.068		U	GAM	U		0.097	U	-		
Uranium 238	U		2.4		U	GAM	U		3.3	U	-		
Americium 241	U		0.050		U	GAM	U		0.070	U	-		

200-PW-2/200-PW-4 OU - Borehole Soil

QC-DUP#1 44790

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2208

7517-007

B16W89

DUPLICATE

SDG <u>7517</u>		Client/Case no <u>Hanford</u>		SDG <u>H2208</u>
Contact <u>Melissa C. Mannion</u>		Contract <u>No. 630</u>		
DUPLICATE		ORIGINAL		
Lab sample id <u>R305091-07</u>	Lab sample id <u>R305091-02</u>	Client sample id <u>B16W89</u>		
Dept sample id <u>7517-007</u>	Dept sample id <u>7517-002</u>	Location/Matrix <u>216-A-37 (C4106)</u> <u>SOLID</u>		
	Received <u>05/14/03</u>	Collected/Weight <u>05/08/03 10:25</u> <u>184.7 g</u>		
% solids <u>96.5</u>	% solids <u>96.5</u>	Custody/SAF No <u>F03-006-72</u> <u>F02-006</u>		

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI- FIERS	RPD %	3σ PROT TOT LIMIT
Tritium	51.6	0.73	0.24	400	B	H	50.4	0.72	0.24	B	2	21
Carbon 14	<u>-3.52</u>	1.7	3.0	50	U	C	-0.904	1.9	3.2	U	-	
Nickel 63	0.328	1.4	2.4	30	U	NI_L	0.309	1.5	2.6	U	-	
Total Strontium	0.050	0.13	0.25	1.0	U	SR	-0.034	0.12	0.17	U	-	
Technetium 99	0.087	0.15	0.53	15	U	TC	0.135	0.30	0.56	U	-	
Thorium 228	0.704	0.42	0.46			TH	0.554	0.31	0.38		24	125
Thorium 230	0.414	0.33	0.40	1.0		TH	0.553	0.31	0.29		29	141
Thorium 232	0.414	0.25	0.32	1.0		TH	0.400	0.25	0.24		3	131
Neptunium 237	0	<u>0.80</u>	0.12	1.0	U	NP	0	0.069	0.10	U	-	
Iodine 129	<u>-0.648</u>	0.64	1.5	2.0	U	I	0.220	1.1	<u>2.5</u>	U	-	

200-PW-2/200-PW-4 OU - Borehole Soil

QC-DUP#2 44791

DUPLICATES

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Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DUP</u>
Version <u>3.06</u>
Report date <u>07/02/03</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2208

7517-008

B16W89

MATRIX SPIKE

SDG <u>7517</u>	Client/Case no <u>Hanford</u>	SDG <u>H2208</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
MATRIX SPIKE	ORIGINAL	
Lab sample id <u>R305091-08</u>	Lab sample id <u>R305091-02</u>	Client sample id <u>B16W89</u>
Dept sample id <u>7517-008</u>	Dept sample id <u>7517-002</u>	Location/Matrix <u>216-A-37 (C4106)</u> <u>SOLID</u>
	Received <u>05/14/03</u>	Collected/Weight <u>05/08/03 10:25</u> <u>184.7 g</u>
% solids <u>96.8</u>	% solids <u>96.5</u>	Custody/SAF No <u>F03-006-72</u> <u>F02-006</u>

ANALYTE	SPIKE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS TEST	ADDED pCi/g	2σ ERR pCi/g	ORIGINAL pCi/g	2σ ERR (COUNT)	REC 3σ % (TOTAL)	LMTS LIMITS	PROTOCOL
Tritium	92.1	0.94	0.23	400	BX H	47.3	1.9	50.4	0.72	88	66-134	60-140

200-PW-2/200-PW-4 OU - Borehole Soil

QC-MS#2 44792

MATRIX SPIKES

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SUMMARY DATA SECTION

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Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-MS</u>
Version <u>3.06</u>
Report date <u>07/02/03</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2208

7517-001

B16WB3

D A T A S H E E T

SDG <u>7517</u>	Client/Case no <u>Hanford</u>	SDG <u>H2208</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R305091-01</u>	Client sample id <u>B16WB3</u>	
Dept sample id <u>7517-001</u>	Location/Matrix <u>216-A-37 (C4106)</u>	<u>SOLID</u>
Received <u>05/14/03</u>	Collected/Weight <u>05/07/03 10:50</u>	<u>757.2 g</u>
% solids <u>98.5</u>	Custody/SAF No <u>F03-006-86</u>	<u>F02-006</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Total Uranium (ug/g)	7440-61-1	0.273	0.031	0.003	1.0		U_T
Uranium 233/234	U-233/234	0.366	0.25	0.23	1.0		U
Uranium 235	15117-96-1	0	0.074	0.28	1.0	U	U
Uranium 238	U-238	0.396	0.25	0.23	1.0		U
Plutonium 238	13981-16-3	-0.030	0.12	0.29	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.060	0.23	1.0	U	PU
Americium 241	14596-10-2	0.055	0.11	0.21	1.0	U	AM
Potassium 40	13966-00-2	8.04	0.58	0.34			GAM
Cobalt 60	10198-40-0	U		0.030	0.050	U	GAM
Antimony 125	14234-35-6	U		0.061		U	GAM
Tin 126	15832-50-5	U		0.047		U	GAM
Cesium 134	13967-70-9	U		0.037		U	GAM
Cesium 137	10045-97-3	U		0.027	0.10	U	GAM
Radium 226	13982-63-3	0.263	0.051	0.057			GAM
Radium 228	15262-20-1	0.381	0.13	0.14			GAM
Europium 152	14683-23-9	U		0.071	0.10	U	GAM
Europium 154	15585-10-1	U		0.11	0.10	U	GAM
Europium 155	14391-16-3	U		0.066	0.10	U	GAM
Thorium 228	14274-82-9	0.353	0.034	0.032			GAM
Thorium 232	TH-232	0.381	0.13	0.14			GAM
Uranium 235	15117-96-1	U		0.097		U	GAM
Uranium 238	U-238	U		3.3		U	GAM
Americium 241	14596-10-2	U		0.070		U	GAM

200-PW-2/200-PW-4 OU - Borehole Soil

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2208

7517-002

B16W89

D A T A S H E E T

SDG <u>7517</u>	Client/Case no <u>Hanford</u>	SDG <u>H2208</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R305091-02</u>	Client sample id <u>B16W89</u>	
Dept sample id <u>7517-002</u>	Location/Matrix <u>216-A-37 (C4106)</u>	<u>SOLID</u>
Received <u>05/14/03</u>	Collected/Weight <u>05/08/03 10:25</u>	<u>184.7 g</u>
% solids <u>96.5</u>	Custody/SAF No <u>F03-006-72</u>	<u>F02-006</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	50.4	0.72	0.24	400	B	H
Carbon 14	14762-75-5	-0.904	1.9	3.2	50	U	C
Nickel 63	13981-37-8	0.309	1.5	2.6	30	U	NI_L
Total Strontium	SR-RAD	-0.034	0.12	0.17	1.0	U	SR
Technetium 99	14133-76-7	0.135	0.30	0.56	15	U	TC
Thorium 228	14274-82-9	0.554	0.31	0.38			TH
Thorium 230	14269-63-7	0.553	0.31	0.29	1.0		TH
Thorium 232	TH-232	0.400	0.25	0.24	1.0		TH
Neptunium 237	13994-20-2	0	0.069	0.10	1.0	U	NP
Iodine 129	15046-84-1	0.220	1.1	2.5	2.0	U	I

200-PW-2/200-PW-4 OU - Borehole Soil

DATA SHEETS

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SUMMARY DATA SECTION

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Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>07/02/03</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2208

7517-003

B16WB4

D A T A S H E E T

SDG <u>7517</u>	Client/Case no <u>Hanford</u>	SDG <u>H2208</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R305091-03</u>	Client sample id <u>B16WB4</u>	
Dept sample id <u>7517-003</u>	Location/Matrix <u>216-A-37 (C4106)</u>	<u>SOLID</u>
Received <u>05/14/03</u>	Collected/Weight <u>05/08/03 10:25</u>	<u>877.2 g</u>
% solids <u>96.8</u>	Custody/SAF No <u>F03-006-87</u>	<u>F02-006</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Total Uranium (ug/g)	7440-61-1	0.313	0.034	0.003	1.0		U_T
Uranium 233/234	U-233/234	0.374	0.23	0.22	1.0		U
Uranium 235	15117-96-1	0.035	0.070	0.27	1.0	U	U
Uranium 238	U-238	0.345	0.17	0.22	1.0		U
Plutonium 238	13981-16-3	0.037	0.15	0.29	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.075	0.29	1.0	U	PU
Americium 241	14596-10-2	-0.028	0.056	0.21	1.0	U	AM
Potassium 40	13966-00-2	9.15	0.65	0.37			GAM
Cobalt 60	10198-40-0	U		0.033	0.050	U	GAM
Antimony 125	14234-35-6	U		0.070		U	GAM
Tin 126	15832-50-5	U		0.048		U	GAM
Cesium 134	13967-70-9	U		0.043		U	GAM
Cesium 137	10045-97-3	U		0.029	0.10	U	GAM
Radium 226	13982-63-3	0.301	0.061	0.064			GAM
Radium 228	15262-20-1	0.488	0.14	0.13			GAM
Europium 152	14683-23-9	U		0.080	0.10	U	GAM
Europium 154	15585-10-1	U		<u>0.12</u>	0.10	U	GAM
Europium 155	14391-16-3	U		<u>0.13</u>	0.10	U	GAM
Thorium 228	14274-82-9	0.402	0.039	0.036			GAM
Thorium 232	TH-232	0.488	0.14	0.13			GAM
Uranium 235	15117-96-1	U		0.11		U	GAM
Uranium 238	U-238	U		3.6		U	GAM
Americium 241	14596-10-2	U		0.082		U	GAM

200-PW-2/200-PW-4 OU - Borehole Soil

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2208

Test AM Matrix SOLID
SDG 7517
Contact Melissa C. Mannion

LAB METHOD SUMMARY

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2208

RESULTS

LAB	RAW	SUF-		Americium
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	241

Preparation batch 7060-198

R305091-01	7517-001	B16WB3		U
R305091-03	7517-003	B16WB4		U
R305091-04	7517-004	LCS (QC ID=44788)		ok
R305091-05	7517-005	BLK (QC ID=44789)		U
R305091-06	7517-006	Duplicate (R305091-01)		- U

Nominal values and limits from method RDLs (pCi/g) 1.0
200-PW-2/200-PW-4 OU - Borehole Soil

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	keV	HELD	PREPARED

Preparation batch 7060-198 2σ prep error 5.0 % Reference Lab Notebook 7060 pg. 198

R305091-01	B16WB3	0.21	0.500	88	116	35	06/11/03	06/11	SS-005
R305091-03	B16WB4	0.21	0.500	78	116	34	06/11/03	06/11	SS-008
R305091-04	LCS (QC ID=44788)	0.27	0.500	62	116		06/11/03	06/11	SS-010
R305091-05	BLK (QC ID=44789)	0.25	0.500	72	117		06/11/03	06/11	SS-011
R305091-06	Duplicate (R305091-01)	0.22	0.500	81	117	35	06/11/03	06/11	SS-015
	(QC ID=44790)								

Nominal values and limits from method 1.0 0.500 20-105 100 100 180

PROCEDURES	REFERENCE	AMCMISO_1E_PLATE_AEA
CP-060	Soil Preparation, rev 4	
CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2	
CP-963	Americium and Curium in Water and Dissolved Samples by Extraction Chromatography, rev 3	
CP-008	Heavy Element Electroplating, rev 7	

AVERAGES ± 2 SD	MDA	0.23 ± 0.054
FOR 5 SAMPLES	YIELD	76 ± 20

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id EBRLE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/02/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2208

Test NP Matrix SOLID
SDG 7517
Contact Melissa C. Mannion

LAB METHOD SUMMARY

NEPTUNIUM IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2208

RESULTS

LAB	RAW	SUF-		Neptunium
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	237
Preparation batch 7060-198				
R305091-02	7517-002	B16W89		U
R305091-04	7517-004	LCS (QC ID=44788)		LOW
R305091-05	7517-005	BLK (QC ID=44789)		U
R305091-07	7517-007	Duplicate (R305091-02)		- U

Nominal values and limits from method RDLs (pCi/g) 1.0
200-PW-2/200-PW-4 OU - Borehole Soil

METHOD PERFORMANCE

LAB	RAW	SUF-		MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS		ANAL-	
SAMPLE ID	TEST FIX	CLIENT	SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
Preparation batch 7060-198 2σ prep error 5.0 % Reference Lab Notebook 7060 pg. 198																
R305091-02		B16W89		0.10	0.500			69		116			42	06/17/03	06/19	SS-058
R305091-04		LCS (QC ID=44788)		0.11	0.500			65		104				06/17/03	06/19	SS-055
R305091-05		BLK (QC ID=44789)		0.12	0.500			63		104				06/17/03	06/19	SS-056
R305091-07		Duplicate (R305091-02)		0.12	0.500			64		104			42	06/17/03	06/19	SS-057
		(QC ID=44791)														

Nominal values and limits from method 1.0 0.500 20-105 100 180

PROCEDURES REFERENCE NP237_LLE_PLATE_AEA
CP-060 Soil Preparation, rev 4
CP-071 Soil Dissolution, > 1.0g Aliquot, rev 2
CP-930 Neptunium from Solids and Water by Extraction
Chromatography, rev 0
CP-008 Heavy Element Electroplating, rev 7

AVERAGES ± 2 SD MDA 0.11 ± 0.019
FOR 4 SAMPLES YIELD 65 ± 5

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id EBRLE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/02/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2208

Test PU Matrix SOLID
SDG 7517
Contact Melissa C. Mannion

LAB METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2208

RESULTS

LAB	RAW	SUF-	Plutonium	Plutonium	
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	238	239/240

Preparation batch 7060-198

R305091-01	7517-001	B16WB3	U	U
R305091-03	7517-003	B16WB4	U	U
R305091-04	7517-004	LCS (QC ID=44788)	ok	ok
R305091-05	7517-005	BLK (QC ID=44789)	U	U
R305091-06	7517-006	Duplicate (R305091-01)	ok	- U

Nominal values and limits from method	RDLs (pCi/g)	1.0	1.0
200-PW-2/200-PW-4 OU - Borehole Soil			

METHOD PERFORMANCE

LAB	RAW	SUF-	MAX MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR

Preparation batch 7060-198 2σ prep error 5.0 % Reference Lab Notebook 7060 pg. 198

R305091-01	B16WB3	0.29	0.500	80	111	34	06/10/03	06/10	SS-040
R305091-03	B16WB4	0.29	0.500	63	112	33	06/10/03	06/10	SS-042
R305091-04	LCS (QC ID=44788)	0.20	0.500	85	118		06/10/03	06/10	SS-043
R305091-05	BLK (QC ID=44789)	0.20	0.500	82	118		06/10/03	06/10	SS-044
R305091-06	Duplicate (R305091-01)	0.26	0.500	66	118	34	06/10/03	06/10	SS-045
	(QC ID=44790)								

Nominal values and limits from method	1.0	0.500	20-105	100	100	180
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PROCEDURES	REFERENCE	PUISO_PLATE_AEA
CP-060	Soil Preparation, rev 4	
CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2	
CP-941	Plutonium in Water and Dissolved Samples by Extraction Chromatography, rev 1	
CP-008	Heavy Element Electroplating, rev 7	

AVERAGES ± 2 SD	MDA 0.25 ± 0.091
FOR 5 SAMPLES	YIELD 75 ± 20

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-LMS
Version	3.06
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2208

Test TH Matrix SOLID
SDG 7517
Contact Melissa C. Mannion

LAB METHOD SUMMARY

THORIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2208

RESULTS

LAB RAW SUF-
SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Thorium 230

Preparation batch 7060-198

R305091-02	7517-002	B16W89	0.553
R305091-04	7517-004	LCS (QC ID=44788)	ok
R305091-05	7517-005	BLK (QC ID=44789)	U
R305091-07	7517-007	Duplicate (R305091-02)	ok

Nominal values and limits from method RDLs (pCi/g) 1.0
200-PW-2/200-PW-4 OU - Borehole Soil

METHOD PERFORMANCE

LAB	RAW	SUF-	MAX MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-				
SAMPLE ID	TEST	FIX	CLIENT	SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR

Preparation batch 7060-198 2σ prep error 5.0 % Reference Lab Notebook 7060 pg. 198

R305091-02	B16W89	0.29	0.250	87	206	42	06/19/03	06/19	SS-039
R305091-04	LCS (QC ID=44788)	0.30	0.250	83	206	06/19/03	06/19	SS-040	
R305091-05	BLK (QC ID=44789)	0.23	0.250	89	206	06/19/03	06/19	SS-042	
R305091-07	Duplicate (R305091-02)	0.40	0.250	88	150	42	06/19/03	06/19	SS-039
	(QC ID=44791)								

Nominal values and limits from method 1.0 0.250 20-105 150 180

PROCEDURES	REFERENCE	THISO_IE_PLATE_AEA
CP-060	Soil Preparation, rev 4	
CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2	
CP-900	Thorium in Water and Dissolved Solid Samples by Extraction Chromatography, rev 1	
CP-008	Heavy Element Electroplating, rev 7	

AVERAGES ± 2 SD	MDA	0.30 ± 0.14
FOR 4 SAMPLES	YIELD	87 ± 5

METHOD SUMMARIES

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Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-LMS
Version	3.06
Report date	07/02/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2208

Test U Matrix SOLID
SDG 7517
Contact Melissa C. Mannion

LAB METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2208

RESULTS

LAB	RAW	SUF-		1: Uranium	2: Uranium	3: Uranium	RESULT RATIOS (%)			
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	233/234	235	238	1+3	2σ	2+3	2σ
Preparation batch 7060-198										
R305091-01		7517-001	B16WB3	0.366	U	0.396	92	86	0	19
R305091-03		7517-003	B16WB4	0.374	U	0.345	108	85	10	21
R305091-04		7517-004	LCS (QC ID=44788)	ok	ok	ok				
R305091-05		7517-005	BLK (QC ID=44789)	U	U	U				
R305091-06		7517-006	Duplicate (R305091-01)	ok	- U	ok	67	54	32	37
Nominal values and limits from method										
			RDLs (pCi/g)	1.0	1.0	1.0	100		4	
200-PW-2/200-PW-4 OU - Borehole Soil							Averages	89		14

METHOD PERFORMANCE

LAB	RAW	SUF-		MAX MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-	
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID		pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD PREPARED	YZED	DETECTOR
Preparation batch 7060-198 2σ prep error 5.0 % Reference Lab Notebook 7060 pg. 198															
R305091-01		B16WB3		0.28	0.500			86		104			42 06/17/03	06/18	SS-058
R305091-03		B16WB4		0.27	0.500			89		101			41 06/17/03	06/18	SS-059
R305091-04		LCS (QC ID=44788)		0.98	0.500			94		102			06/17/03	06/18	SS-060
R305091-05		BLK (QC ID=44789)		0.26	0.500			92		102			06/17/03	06/18	SS-061
R305091-06		Duplicate (R305091-01)		0.30	0.500			80		102			42 06/17/03	06/18	SS-062
(QC ID=44790)															
Nominal values and limits from method															
				1.0	0.500			20-105		100	100	180			

PROCEDURES REFERENCE UIISO_PLATE_AEA
CP-060 Soil Preparation, rev 4
CP-071 Soil Dissolution, > 1.0g Aliquot, rev 2
CP-921 Uranium in Water and Dissolved Samples by
Extraction Chromatography, rev 0
CP-008 Heavy Element Electroplating, rev 7

AVERAGES ± 2 SD MDA 0.42 ± 0.63
FOR 5 SAMPLES YIELD 88 ± 11

METHOD SUMMARIES

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Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/02/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2208

Test SR Matrix SOLID
SDG 7517
Contact Melissa C. Mannion

LAB METHOD SUMMARY

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H2208

RESULTS

LAB	RAW	SUF-		Total
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Strontium
Preparation batch 7060-198				
R305091-02		7517-002	B16W89	U
R305091-04		7517-004	LCS (QC ID=44788)	ok
R305091-05		7517-005	BLK (QC ID=44789)	U
R305091-07		7517-007	Duplicate (R305091-02)	- U

Nominal values and limits from method RDLs (pCi/g) 1.0
200-PW-2/200-PW-4 OU - Borehole Soil

METHOD PERFORMANCE

LAB	RAW	SUF-		MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS		ANAL-	
SAMPLE ID	TEST FIX	CLIENT	SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
Preparation batch 7060-198 2σ prep error 10.0 % Reference Lab Notebook 7060 pg. 198																
R305091-02		B16W89		0.17	1.00			90		400			33	06/10/03	06/10	GRB-230
R305091-04		LCS (QC ID=44788)		0.19	1.00			83		400				06/10/03	06/10	GRB-232
R305091-05		BLK (QC ID=44789)		0.29	1.00			81		100				06/10/03	06/10	GRB-230
R305091-07		Duplicate (R305091-02)		0.25	1.00			95		100			33	06/10/03	06/10	GRB-232
		(QC ID=44791)														
Nominal values and limits from method				1.0	1.00			30-105		100			180			

PROCEDURES REFERENCE SRTOT_SEP_PRECIP_GPC
CP-060 Soil Preparation, rev 4
CP-071 Soil Dissolution, > 1.0g Aliquot, rev 2
CP-381 Strontium in Solids, rev 1

AVERAGES ± 2 SD MDA 0.22 ± 0.11
FOR 4 SAMPLES YIELD 87 ± 13

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/02/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2208

Test TC Matrix SOLID
SDG 7517
Contact Melissa C. Mannion

LAB METHOD SUMMARY

TECHNETIUM 99 IN SOIL

BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H2208

RESULTS

LAB	RAW	SUF-		Technetium
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	99
Preparation batch 7060-198				
R305091-02	7517-002	B16W89		U
R305091-04	7517-004	LCS (QC ID=44788)		ok
R305091-05	7517-005	BLK (QC ID=44789)		U
R305091-07	7517-007	Duplicate (R305091-02)		- U

Nominal values and limits from method RDLs (pCi/g) 15
200-PW-2/200-PW-4 OU - Borehole Soil

METHOD PERFORMANCE

LAB	RAW	SUF-		MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS		ANAL-	
SAMPLE ID	TEST FIX	CLIENT	SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
Preparation batch 7060-198 2σ prep error 10.0 % Reference Lab Notebook 7060 pg. 198																
R305091-02		B16W89		0.56	1.02			88		50			52	06/24/03	06/29	GRB-222
R305091-04		LCS (QC ID=44788)		0.52	1.00			98		50				06/24/03	06/27	GRB-218
R305091-05		BLK (QC ID=44789)		0.58	1.00			87		50				06/24/03	06/28	GRB-202
R305091-07		Duplicate (R305091-02)		0.53	1.02			91		50			50	06/24/03	06/27	GRB-220
		(QC ID=44791)														

Nominal values and limits from method 15 1.00 20-105 50 180

PROCEDURES	REFERENCE	TC99_TR_SEP_LSC
CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2	
CP-021	Preparation of Tc-99m Tracer, rev 2	
CP-002	Q.C. Preparation, rev 4	
CP-003	Addition of Carriers and Tracers, rev 5	
CP-542	Technetium-99 Purification (Soil) by Extraction Chromatography, rev 2	
CP-008	Heavy Element Electroplating, rev 7	

AVERAGES ± 2 SD	MDA 0.55 ± 0.055
FOR 4 SAMPLES	YIELD 91 ± 10

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id EBRLE
Protocol Hanford
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2208

Test GAM Matrix SOLID
SDG 7517
Contact Melissa C. Mannion

LAB METHOD SUMMARY

GAMMA SCAN
GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2208

RESULTS

LAB RAW SUF-
SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Cobalt 60 Cesium 137

Preparation batch 7060-198

R305091-01	7517-001	B16WB3	U	U
R305091-03	7517-003	B16WB4	U	U
R305091-04	7517-004	LCS (QC ID=44788)	ok	ok
R305091-05	7517-005	BLK (QC ID=44789)	U	U
R305091-06	7517-006	Duplicate (R305091-01)	- U	- U

Nominal values and limits from method RDLs (pCi/g) 0.050 0.10
200-PW-2/200-PW-4 OU - Borehole Soil

METHOD PERFORMANCE

LAB RAW SUF- MDA ALIQ PREP DILU- YIELD EFF COUNT FWHM DRIFT DAYS ANAL-
SAMPLE ID TEST FIX CLIENT SAMPLE ID pCi/g g FAC TION % % min keV KeV HELD PREPARED YZED DETECTOR

Preparation batch 7060-198 2σ prep error 15.0 % Reference Lab Notebook 7060 pg. 198

R305091-01	B16WB3	0.23	260	694	27	05/30/03	06/03	JR,03,00
R305091-03	B16WB4	0.29	231	657	27	05/30/03	06/04	JR,03,00
R305091-04	LCS (QC ID=44788)	0.044	231	411		05/30/03	06/04	JR,07,00
R305091-05	BLK (QC ID=44789)	0.23	231	411		05/30/03	06/04	JR,05,00
R305091-06	Duplicate (R305091-01)	0.16	260	411	28	05/30/03	06/04	JR,04,00
	(QC ID=44791)							

Nominal values and limits from method 0.050 231 100 180

PROCEDURES REFERENCE GAMMA_GS
CP-060 Soil Preparation, rev 4
CP-100 Ge(Li) Preparation for Commercial Samples, rev 5

AVERAGES ± 2 SD MDA 0.19 ± 0.19
FOR 5 SAMPLES YIELD ±

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Hanford
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Report date 07/02/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2208

Test I Matrix SOLID
SDG 7517
Contact Melissa C. Mannion

LAB METHOD SUMMARY

IODINE 129 IN SOIL
GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2208

RESULTS

LAB	RAW	SUF-		
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Iodine 129
Preparation batch 7060-198				
R305091-02	7517-002	B16W89		U
R305091-04	7517-004	LCS (QC ID=44788)		ok
R305091-05	7517-005	BLK (QC ID=44789)		U
R305091-07	7517-007	Duplicate (R305091-02)		- U

Nominal values and limits from method RDLs (pCi/g) 2.0
200-PW-2/200-PW-4 OU - Borehole Soil

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD PREPARED	YZED DETECTOR
Preparation batch 7060-198 2σ prep error 10.0 % Reference Lab Notebook 7060 pg. 198													
R305091-02		B16W89	2.5	1.00			50		1253		44	06/12/03 06/21	XSPEC-016
R305091-04		LCS (QC ID=44788)	1.4	1.00			97		909			06/12/03 06/22	XSPEC-004
R305091-05		BLK (QC ID=44789)	1.3	1.00			100		908			06/12/03 06/22	XSPEC-016
R305091-07		Duplicate (R305091-02) (QC ID=44791)	1.5	1.00			63		608		46	06/12/03 06/23	XSPEC-004

Nominal values and limits from method 2.0 1.00 20-105 300 180

PROCEDURES	REFERENCE	I129_SEP_LEPS_GS
	CP-024	Iodine-129, Sample Dissolution, rev 3
	CP-530	Iodine-129 Purification, rev 0

AVERAGES ± 2 SD	MDA	1.7 ± 1.1
FOR 4 SAMPLES	YIELD	78 ± 50

METHOD SUMMARIES

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Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2208

Test U T Matrix SOLID
SDG 7517
Contact Melissa C. Mannion

LAB METHOD SUMMARY

URANIUM, TOTAL IN SOIL
KINETIC PHOSPHORIMETRY (KPA)

Client Hanford
Contract No. 630
Contract SDG H2208

RESULTS

LAB	RAW	SUF-	Total
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID

Preparation batch 7060-198

R305091-01	7517-001	B16WB3	0.273
R305091-03	7517-003	B16WB4	0.313
R305091-04	7517-004	LCS (QC ID=44788)	ok
R305091-05	7517-005	BLK (QC ID=44789)	U
R305091-06	7517-006	Duplicate (R305091-01)	ok

Nominal values and limits from method RDLs (ug/g) 1.0
200-PW-2/200-PW-4 OU - Borehole Soil

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	ug/g	g	FAC	TION	%	%	min	keV	KeV	HELD PREPARED	YZED DETECTOR

Preparation batch 7060-198 2σ prep error 9.0 % Reference Lab Notebook 7060 pg. 198

R305091-01	B16WB3	0.003	0.100	33	06/09/03	06/09	KPA-001
R305091-03	B16WB4	0.003	0.100	32	06/09/03	06/09	KPA-001
R305091-04	LCS (QC ID=44788)	0.032	0.100		06/09/03	06/09	KPA-001
R305091-05	BLK (QC ID=44789)	0.003	0.100		06/09/03	06/09	KPA-001
R305091-06	Duplicate (R305091-01)	0.003	0.100	33	06/09/03	06/09	KPA-001

Nominal values and limits from method 1.0 0.100 180

PROCEDURES	REFERENCE	UTOT_KPA
CP-060	Soil Preparation, rev 4	
CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2	
CP-044	Sample Preparation for Total Uranium by Kinetic Phosphorimetry, rev 4	
CP-928	Total Uranium by Kinetic Phosphorimetry, rev 5	

AVERAGES ± 2 SD MDA 0.009 ± 0.026
FOR 5 SAMPLES YIELD _____ ± _____

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/02/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2208

Test C Matrix SOLID
SDG 7517
Contact Melissa C. Mannion

LAB METHOD SUMMARY

CARBON 14 IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H2208

RESULTS

LAB RAW SUF-
SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Carbon 14

Preparation batch 7060-198

R305091-02	7517-002	B16W89	U
R305091-04	7517-004	LCS (QC ID=44788)	ok
R305091-05	7517-005	BLK (QC ID=44789)	U
R305091-07	7517-007	Duplicate (R305091-02)	- U

Nominal values and limits from method RDLs (pCi/g) 50
200-PW-2/200-PW-4 OU - Borehole Soil

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-				
SAMPLE ID	TEST	FIX	CLIENT	SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR

Preparation batch 7060-198 2σ prep error 10.0 % Reference Lab Notebook 7060 pg. 198

R305091-02	B16W89	3.2	0.324	100	100	47	06/24/03	06/24	LSC-004
R305091-04	LCS (QC ID=44788)	9.7	0.324	100	10		06/24/03	06/25	LSC-004
R305091-05	BLK (QC ID=44789)	3.2	0.324	100	100		06/24/03	06/24	LSC-004
R305091-07	Duplicate (R305091-02)	3.0	0.364	100	100	47	06/24/03	06/24	LSC-004
	(QC ID=44791)								

Nominal values and limits from method 50 0.324 50 180

PROCEDURES REFERENCE C14_COX_LSC
CP-251 Tritium/Carbon-14 Oxidation, rev 5

AVERAGES ± 2 SD MDA 4.8 ± 6.6
FOR 4 SAMPLES YIELD 100 ± 0

METHOD SUMMARIES

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Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/02/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2208

Test H Matrix SOLID
SDG 7517
Contact Melissa C. Mannion

LAB METHOD SUMMARY

TRITIUM IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H2208

RESULTS

LAB RAW SUF-
SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Tritium

Preparation batch 7060-198

R305091-02	7517-002	B16W89	50.4
R305091-04	7517-004	LCS (QC ID=44788)	ok
R305091-05	7517-005	BLK (QC ID=44789)	<u>0.336</u>
R305091-07	7517-007	Duplicate (R305091-02)	ok
R305091-08	7517-008	Spike (R305091-02)	ok X

Nominal values and limits from method RDLs (pCi/g) 400
200-PW-2/200-PW-4 OU - Borehole Soil

METHOD PERFORMANCE

LAB RAW SUF- MDA ALIQ PREP DILU- YIELD EFF COUNT FWHM DRIFT DAYS ANAL-
SAMPLE ID TEST FIX CLIENT SAMPLE ID pCi/g g FAC TION % % min keV KeV HELD PREPARED YZED DETECTOR

Preparation batch 7060-198 2σ prep error 10.0 % Reference Lab Notebook 7060 pg. 198

R305091-02	B16W89	0.24	21.6	35	120	45	06/20/03	06/22	LSC-004
R305091-04	LCS (QC ID=44788)	0.28	20.0	33	120		06/20/03	06/22	LSC-004
R305091-05	BLK (QC ID=44789)	0.27	20.0	33	120		06/20/03	06/22	LSC-004
R305091-07	Duplicate (R305091-02) (QC ID=44791)	0.24	22.0	35	120	45	06/20/03	06/22	LSC-004
R305091-08	Spike (R305091-02) (QC ID=44792)	0.23	22.0	35	120	45	06/20/03	06/22	LSC-004

Nominal values and limits from method 400 20.0 25 180

PROCEDURES REFERENCE 906.0_H3_LSC
CP-216 Tritium in Solid Samples by Azeotropic
Distillation, rev 6

AVERAGES ± 2 SD MDA 0.25 ± 0.043
FOR 5 SAMPLES YIELD 34 ± 2

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/02/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2208

Test NI L Matrix SOLID
SDG 7517
Contact Melissa C. Mannion

LAB METHOD SUMMARY

NICKEL 63 IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG_H2208

RESULTS

LAB RAW SUF-
SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Nickel 63

Preparation batch 7060-198

R305091-02	7517-002	B16W89	U
R305091-04	7517-004	LCS (QC ID=44788)	ok
R305091-05	7517-005	BLK (QC ID=44789)	U
R305091-07	7517-007	Duplicate (R305091-02)	- U

Nominal values and limits from method RDLs (pCi/g) 30
200-PW-2/200-PW-4 OU - Borehole Soil

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-				
SAMPLE ID	TEST	FIX	CLIENT	SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR

Preparation batch 7060-198 2σ prep error 10.0 % Reference Lab Notebook 7060 pg. 198

R305091-02	B16W89	2.6	0.500	76	100	36	06/10/03	06/13	LSC-004
R305091-04	LCS (QC ID=44788)	2.3	0.500	98	77		06/10/03	06/13	LSC-004
R305091-05	BLK (QC ID=44789)	2.0	0.500	97	100		06/10/03	06/13	LSC-004
R305091-07	Duplicate (R305091-02) (QC ID=44791)	2.4	0.500	82	100	36	06/10/03	06/13	LSC-004

Nominal values and limits from method 30 0.500 30-105 50 180

PROCEDURES	REFERENCE	NI63_LSC
CP-060	Soil Preparation, rev 4	
CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2	
CP-431	Nickel-63 Purification, rev 5	

AVERAGES ± 2 SD	MDA	2.3	±	0.50
FOR 4 SAMPLES	YIELD	88	±	22

METHOD SUMMARIES

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Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-LMS
Version	3.06
Report date	07/02/03

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SAMPLE DELIVERY GROUP H2208

SDG 7517
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG_H2208

SAMPLE SUMMARY

The Sample and QC Summary Reports show all samples, including QC samples, reported in one Sample Delivery Group (SDG).

The Sample Summary Report fully identifies client samples and gives the corresponding lab sample identification. The QC Summary Report shows at the sample level how the lab organized the samples into batches and generated QC samples. The Preparation Batch and Method Summary Reports show this at the analysis level.

The following notes apply to these reports:

- * LAB SAMPLE ID is the lab's primary identification for a sample.
- * DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.
- * CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.
- * QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

QC BATCH is not necessarily the same as SDG, which reflects samples received and reported together.

- * All Lab Control Samples, Method Blanks, Duplicates and Matrix Spikes are shown that QC any of the samples. Due to possible reanalyses, not all results for all these QC samples may be relevant to the SDG. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

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Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
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SAMPLE DELIVERY GROUP H2208

SDG 7517
Contact Melissa C. Mannion

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Client Hanford
Contract No. 630
Case no SDG H2208

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches in one Sample Delivery Group (SDG) with information necessary to check the completeness and consistency of the SDG.

The following notes apply to this report:

- * The preparation batches are shown in the same order as the Method Summary Reports are printed.
- * Only analyses of planchets relevant to the SDG are included.
- * Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.
- * The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

These qualifiers should be reviewed as follows:

- X Some data has been manually entered or modified. Transcription errors are possible.
- P One or more results are 'preliminary'. The data is not ready for final reporting.
- 2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

Other lab defined qualifiers may occur. In general, these should be addressed in the SDG narrative.

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SDG 7517
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WORK SUMMARY

The Work Summary Report shows all samples, including QC samples, and all relevant analyses in one Sample Delivery Group (SDG). This report is often useful as supporting documentation for an invoice.

The following notes apply to this report:

- * TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.
- * SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.
- * The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.
- * PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.
- * For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.
- * The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

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Form DVD-RG
Version 3.06
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Client Hanford
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DATA SHEET

The Data Sheet Report shows all results and primary supporting information for one client sample or Method Blank. This report corresponds to both the CLP Inorganics and Organics Data Sheet.

The following notes apply to this report:

- * TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.
- * The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

The Method Summary Report for each TEST has method performance data, such as yield, for each Lab Sample ID and a list of procedures used in the method.

- * ERRORS can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.
- * A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.
- * When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

U The RESULT is less than the MDA (Minimum Detectable Activity).

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Client Hanford
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DATA SHEET

If the MDA is blank, the ERROR is used as the limit.

- J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.
 - B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.
- Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.
- For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.
- L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.
 - H Similar to 'L' except the recovery was high.
 - P The RESULT is 'preliminary'.
 - X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.
 - 2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

Other qualifiers are lab defined. Definitions should be in the SDG narrative.

The following values are underlined to indicate possible problems:

- * An MDA is underlined if it is bigger than its RDL.

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SUMMARY DATA SECTION

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Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
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DATA SHEET

- * An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.
- * A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.
- * When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

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LAB CONTROL SAMPLE

The Lab Control Sample Report shows all results, recoveries and primary supporting information for one Lab Control Sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.
- * An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

An amount added is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

- * REC (Recovery) is RESULT divided by ADDED expressed as a percent.
- * The first, computed limits for the recovery reflect:
 1. The error of RESULT, including that introduced by rounding the result prior to printing.

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.
 2. The error of ADDED.
 3. A lab specified, per analyte bias. The bias changes the center of the computed limits.
- * The second limits are protocol defined upper and lower QC limits for the recovery.
- * The recovery is underlined if it is outside either of these ranges.

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DUPLICATE

The Duplicate Report shows all results, differences and primary supporting information for one Duplicate and associated Original sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. This applies both to the Duplicate and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Duplicate has data for a TEST and the lab did not do this test to the Original, the Original's RESULTS are underlined.

- * The RPD (Relative Percent Difference) is the absolute value of the difference of the RESULTS divided by their average expressed as a percent.

If both RESULTS are less than their MDAs, no RPD is computed and a '-' is printed.

For an analyte, if the lab did work for both samples but has data for only one, the MDA from the sample with data is used as the other's result in the RPD.

- * The first, computed limit is the sum, as square root of sum of squares, of the errors of the results divided by the average result as a percent, hence the relative error of the difference rather than the error of the relative difference. The errors include those introduced by rounding the RESULTS prior to printing.

If this limit is labeled TOT, it includes the preparation error in the RESULTS. If labeled CNT, it does not.

This value reported for this limit is at most 999.

- * The second limit for the RPD is the larger of:

1. A fixed percentage specified in the protocol.

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DUPLICATE

2. A protocol factor (typically 2) times the average MDA as a percent of the average result. This limit applies when the results are close to the MDAs.

- * The RPD is underlined if it is greater than either limit.
- * If specified by the lab, the second limit column is replaced by the Difference Error Ratio (DER), which is the absolute value of the difference of the results divided by the quadratic sum of their one sigma errors, the same errors as used in the first limit.

Except for differences due to rounding, the DER is the same as the RPD divided by the first RPD limit with the limit scaled to 1 sigma.

- * The DER is underlined if it is greater than the sigma factor, typically 2 or 3, shown in the header for the first RPD limit.

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SUMMARY DATA SECTION

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MATRIX SPIKE

The Matrix Spike Report shows all results, recoveries and primary supporting information for one Matrix Spike and associated Original sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. This applies both to the Spiked and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Spike has data for a TEST and the lab did not do this test to the Original, the Original's RESULTS are underlined.

- * An amount ADDED is the lab's value for the actual amount spiked into the Spike sample with its ERROR an estimate of the error of this amount.

An amount is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

- * REC (Recovery) is the Spike RESULT minus the Original RESULT divided by ADDED expressed as a percent.

- * The first, computed limits for the recovery reflect:

1. The errors of the two RESULTS, including those introduced by rounding them prior to printing.

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

2. The error of ADDED.

3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

- * The second limits are protocol defined upper and lower QC limits

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SUMMARY DATA SECTION

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MATRIX SPIKE

for the recovery.

These limits are left blank if the Original RESULT is more than a protocol defined factor (typically 4) times ADDED. This is a way of accounting for that when the spike is small compared to the amount in the original sample, the recovery is unreliable.

- * The recovery is underlined (out of spec) if it is outside either of these ranges.

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REPORT GUIDE

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Contract No. 630
Case no SDG H2208

METHOD SUMMARY

The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

- * Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

- * The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

- * If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

The J and X flags are as on the data sheet.

- * Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.
- * Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

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METHOD SUMMARY

means no amount ADDED was specified. 'LOW' and 'HIGH' correspond to when the recovery is underlined on the Lab Control Sample or Matrix Spike Report. See these reports for supporting data.

- * Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.
- * If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.

MDAs are underlined if greater than the printed RDL.

- * Aliquots are underlined if less than the nominal value specified for the method.
- * Preparation factors are underlined if greater than the nominal value specified for the method.
- * Dilution factors are underlined if greater than the nominal value specified for the method.
- * Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.
- * Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.
- * Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

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SUMMARY DATA SECTION

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GUIDE, cont.

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METHOD SUMMARY

- * Count times are underlined if less than the nominal value specified for the method.
- * Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.
- * Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.
- * Days Held are underlined if greater than the holding time specified in the protocol.
- * Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1+3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant

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SDG 7517
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GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG_H2208

METHOD SUMMARY

results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included. No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error for the ratio reflects both the error in the Gross result and the sum, as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column showing the total weight computed from associated isotopic results. Ignoring results less than their MDAs, this is a weighted sum of the isotopic results. The weights depend on the molecular weight and half-life of each isotope so as to convert activities (decays) to weight (atoms).

If a ratio of total computed to measured elemental uranium or thorium is shown, the error for the ratio reflects the errors in all the measurements.

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Protocol Hanford
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FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-86		Page 1 of 1	
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N Data Turnaround 30 Days	
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-37 (C4106); (237.5'-240')		H2208(7517)		SAF No. F03-006		Air Quality <input type="checkbox"/>	
Ice Chest No. ERC 02 008 686 99 005		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Government Vehicle FED EX			
Shipped To MJS-12-03 Waste Sampling & Characterization Eberling		Offsite Property No. -N/A A030 Z58				Bill of Lading/Air Bill No. -N/A SEE OS'PC			
POSSIBLE SAMPLE HAZARDS/REMARKS				Preservation		Cool 4C	Cool 4C	Cool 4C	Cool 4C
Special Handling and/or Storage 20030601				Type of Container		Gr*	Gr*	Gr*	Gr*
				No. of Container(s)		3	1	3	1
				Volume		40mL	250mL	40mL	500mL
SAMPLE ANALYSIS				See item (1) in Special Instructions		See item (2) in Special Instructions		See item (3) in Special Instructions	
Sample No.		Matrix *		Sample Date		Sample Time			
B16WB3		SOIL		5-7-03		1050		X X X X	
W030000375									
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		<p>** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.</p> <p>(1) VOA - 8260A (TCL); VOA - 8260A (Add-On) (2-Pentamont, Benzyl alcohol, n-Butylbenzene);</p> <p>(2) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (2-Butoxyethanol, Tributyl phosphate);</p> <p>TPH-Diesel Range - WTPH-D; TPH Gasoline Range - WTPH-G; PCBs - 8082</p> <p>(3) Alcohols, Glycols, & Ketones - 8015 (1-Butanol, Diethyl ether, Ethylene glycol, Methanol)</p> <p>(4) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155);</p> <p>Gamma Spec - Add-on (Antimony-125, Cesium-134, Radium-226, Radium-228, Tin-126); Isotopic</p> <p>Plutonium; Americium-241; Isotopic Uranium; Free Radicals - 10000 (Complete) (Antimony,</p> <p>Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Manganese, Nickel, Selenium, Silver,</p> <p>Vanadium, ICP Metals - 6010A (Add-on) (Bismuth, Boron); IC Anions - 300.0 (Chloride, Fluoride,</p> <p>Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate); Cyanide (Total) - 335.2 (Cyanide (C)-</p> <p>300.2 (Nitrogen in Cyanide); pH (Soil) - 9045; Mercury - 771</p> <p>Ammonia - 350.3; Total Uranium - KPA</p> <p>ICP-6010-TRACE</p>	
1/10/03 1405		5/7/03 1405		1/10/03 1405		5/7/03 1405			
1/10/03 1300		5/8/03 1300		1/10/03 1300		5/8/03 1300			
1/10/03 1415		5/8/03 1415		1/10/03 1415		5/8/03 1415			
1/10/03 1415		5/8/03 1415		1/10/03 1415		5/8/03 1415			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time			
REF # 1A 3728		5/13/03 1300		3/10/03 1300		5/13/03 1300			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time			
2/10/03 1300		5/13/03 1300		FED EX					
LABORATORY SECTION		Received By		Title		Date/Time			
		LUCAS		CBECNE SERVICES		1000 5-14-03			
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By		Date/Time			

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					F03-006-72		Page 1 of 1		
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N		Data Turnaround 45 Days	
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-37 (C4106); (272.5'-275')		H2208 (7517)		SAF No. F03-006		Air Quality <input type="checkbox"/>			
Ice Chest No. <u>ERC 02008</u>		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express					
Shipped To EBERLINE SERVICES (Formerly TMA)		Offsite Property No. <u>A030258</u>				Bill of Lading/Air Bill No. <u>SEB 08PC</u>					
POSSIBLE SAMPLE HAZARDS/REMARKS Special Handling and/or Storage				Preservation	Cool 4C	Cool 4C	Cool 4C	None	None		
				Type of Container	aG	aG	aG	aG	aG		
				No. of Container(s)	1	1	1	1	1		
				Volume	120mL	60mL	120mL	60mL	60mL		
SAMPLE ANALYSIS				Chromium Hex - 7196	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (1) in Special Instructions.	Tritium - H3			
Sample No.	Matrix *	Sample Date	Sample Time								
B16W89	SOIL	5/8/03	1025				X	X			
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS			
Relinquished By/Removed From <u>TH</u>		Date/Time <u>5/8/03 1415</u>		Received By/Stored In <u>ERC</u>		Date/Time <u>5/8/03 1415</u>		<p>** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis <u>1/2 4/22/03</u></p> <p>(1) Technetium-99; Strontium-89,90 -- Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-129; Nickel-63; Neptunium-237</p> <p>Personnel not available to relinquish samples from the 3728 Ref # <u>1A</u> on <u>5/13/03</u></p>			
Relinquished By/Removed From <u>Richard R. Nielson</u>		Date/Time <u>5/8/03 1415</u>		Received By/Stored In <u>Ref # 1A 3728</u>		Date/Time <u>5/8/03 1415</u>					
Relinquished By/Removed From <u>REF # 3728</u>		Date/Time <u>5/13/03 1300</u>		Received By/Stored In <u>SJ GALE</u>		Date/Time <u>5/13/03 1300</u>					
Relinquished By/Removed From <u>SJ GALE</u>		Date/Time <u>5/13/03 1300</u>		Received By/Stored In <u>FED EX</u>		Date/Time					
Relinquished By/Removed From <u>FED EX</u>		Date/Time		Received By/Stored In <u>La A</u>		Date/Time <u>5-14-03 1000</u>					
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		Matrix *			
								<p>S=Soil SE=Sediment SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue WI=Wipe L=Liquid V=Vegetation X=Other</p>			
LABORATORY SECTION	Received By		Title		Date/Time						
FINAL SAMPLE DISPOSITION	Disposal Method		Disposed By		Date/Time						

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-87		Page 1 of 1	
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N Data Turnaround 30 Days	
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-37 (C4106); (272.5'-275') H2208 (7517)		SAF No. F03-006		Air Quality <input type="checkbox"/>			
Ice Chest No. ERC-02 008 ERC-99 005		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Government Vehicle		FED EX	
Shipped To TMS 5-12-03 Waste Sampling & Characterization Ederline		Offsite Property No. N/A A030258		Bill of Lading/Air Bill No. N/A S080SPC					
POSSIBLE SAMPLE HAZARDS/REMARKS Special Handling and/or Storage				Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	
				Type of Container	Gs*	aG	Gs*	G/P	
				No. of Container(s)	73	1	73	1	
				Volume	40mL	40mL	40mL	120mL	
SAMPLE ANALYSIS				See item (1) in Special Instructions	See item (2) in Special Instructions	See item (3) in Special Instructions	See item (4) in Special Instructions		
Sample No.	Matrix *	Sample Date	Sample Time						
B16WB4	SOIL	5/8/03	1025	X	X	X	X		
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By/Removed From J.S. Pope Age 5/8/03 1120		Received By/Stored In Beebe 5/8/03 1120		<p>** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.</p> <p>(1) VOA - 8260A (FCL); VOA - 8260A (Add-On) (2-Pentanone, Benzyl alcohol, n-Butylbenzene); (2) Semi-VOA - 8270A (FCL); Semi-VOA - 8270A (Add-On) (2-Butoxyethanol, Tributyl phosphate); TPH Diesel Range - WTPH-D; TPH Gasoline Range - WTPH-O; PCBs - 8082</p> <p>(3) Alcohols, Glycols, & Ketones - 8013 (Diethyl ether, Ethylene glycol, Methanol)</p> <p>(4) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Antimony-125, Cesium-134, Radium-226, Radium-228, Tin-126); Isotopic Plutonium; Americium-241; Isotopic Uranium; Trace Elements (Cadmium, Lead, Manganese, Mercury, Nickel, Silver, Vanadium); ICP Metals - 6010A (Add-on) (Bismuth, Boron); IC Anions - 300.0 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate); Cyanide (Total) - 300.7 (Nitrogen in ammonium); pH (Soil) - 9045; mercury - 7471; 9010; Ammonia 350.3; Total Uranium - KPA</p> <p>Personnel not available to relinquish samples from the 3728 Ref # 1A on 5/13/03</p> <p>ICP-6010-TRACE</p>				S=Soil SE=Sediment SL=Sludge W=Water O=Oil A=Air DS=Drain Solids DL=Drum Liquids T=Tissue Wt=Wipe L=Liquid V=Vegetation X=Other	
Relinquished By/Removed From Beebe 5/8/03 1300		Received By/Stored In Mannix 5/8/03 1300							
Relinquished By/Removed From Mannix 5/8/03 1415		Received By/Stored In R. Nickson 5/8/03 1415							
Relinquished By/Removed From R. Nickson 5/8/03 1300		Received By/Stored In REF 1A 3728 5/8/03 1300							
Relinquished By/Removed From REF 1A 3728 5/8/03 1300		Received By/Stored In SIOLE 5/8/03 1300							
Relinquished By/Removed From SIOLE 5/8/03 1300		Received By/Stored In FED EX							
LABORATORY SECTION		Received By L. C. J.		Title Ederline SERVO		Date/Time 1000 5-14-03			
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By		Date/Time			

**ANALYTICAL SERVICES GROUP**

Richmond, CA Laboratory

SAMPLE RECEIPT CHECKLIST

Client: FLR Date/Time received 1000 5-14-03

CoC No. F03-006-86,87,72

Container I.D. No. GRC-02-008 Requested TAT (Days) 45 P.O. Received Yes [] No []

INSPECTION

1. Custody seals on shipping container intact? Yes [✓] No [] N/A []

2. Custody seals on shipping container dated & signed? Yes [✓] No [] N/A []

3. Custody seals on sample containers intact? Yes [✓] No [] N/A []

4. Custody seals on sample containers dated & signed? Yes [✓] No [] N/A []

5. Packing material is: Wet [] Dry [✓]

6. Number of samples in shipping container: 3

7. Number of containers per sample: _____ (Or see CoC ✓)

8. Paperwork agrees with samples? Yes [✓] No []

9. Samples have: Tape [] Hazard labels [] Rad labels [✓] Appropriate sample labels [✓]

10. Samples are: In good condition [✓] Leaking [] Broken Container [] Missing []

11. Samples are: Preserved [] Not preserved [✓] Preservative _____

12. Describe any anomalies: _____

13. Was P.M. notified of any anomalies? Yes [] No [] Date _____

14. Received by [Signature] Date: 5-14-03 Time: 1000

Customer Sample No.	cpm	mR/hr	wipe	Customer Sample No.	cpm	mR/hr	wipe
B16W83	250						
B16W89	240						
B16W84	240						

Ion Chamber Ser. No. _____

Calibration date _____

Alpha Meter Ser. No. _____

Calibration date _____

Beta/Gamma Meter Ser. No. 99574Calibration date 12-12-03



30 June 2003

Mr. Steve Trent
Fluor Hanford Inc.
825 Jadwin Ave.
Richland, WA 99352

**Subject: Contract No. 630
Analytical Data Package**



Dear Mr. Trent:

Enclosed are the hard copy analytical reports for the batch number/fraction indicated (marked X) in the following table:

LvLI Batch #	0305L403
SDG #	H2208
SAF #	F03-006
Date Received	5-14-03
# Samples	3
Matrix	Soil
Volatiles	X
Semivolatiles	X
Pest/PCB	X
DRO/GRO/KRO	X
Herbicides	
GC Alcohol	X
Metals	X
Inorganics	X

The electronic data deliverable (EDD) will be emailed shortly. If you have any questions, please don't hesitate to contact me at (610) 280-3012.

Sincerely,
Lionville Laboratory Incorporated


Orlette S. Johnson
Project Manager

Lionville Laboratory, Inc.
VOA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2208

DATE RECEIVED: 05/14/03

LVL LOT # :0305L403

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B16WB4	002	S	03LVJ057	05/08/03	N/A	05/20/03
B16WB4	002 MS	S	03LVJ056	05/08/03	N/A	05/17/03
B16WB4	002 MSD	S	03LVJ056	05/08/03	N/A	05/17/03

LAB QC:

VBLKSE	MB1	S	03LVJ057	N/A	N/A	05/20/03
VBLKSE	MB1 BS	S	03LVJ057	N/A	N/A	05/20/03
VBLKRT	MB1	S	03LVJ056	N/A	N/A	05/17/03
VBLKRT	MB1 BS	S	03LVJ056	N/A	N/A	05/17/03





Client: TNU-HANFORD F03-006
LVL #: 0305L403
SDG/SAF # H2208/F03-006

W.O. #: 11343-606-001-9999-00
Date Received: 05-14-2003

GC/MS VOLATILE

One (1) soil sample was collected on 05-08-2003.

The sample and its associated QC samples were analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8260B for client specified volatile target compounds on 05-17,20-2003.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. All results presented in this report are derived from a sample that met LvLI's sample acceptance policy.
2. The sample was analyzed within holding time.
3. Non-target compounds were detected in the sample.
4. One (1) of twenty-one (21) surrogate recoveries was outside EPA QC limits. The analysis of associated matrix spike sample fulfills the reanalysis requirement of sample B16WB4 MSD.
5. All matrix spike recoveries were within EPA QC limits.
6. All blank spike recoveries were within EPA QC limits.
7. The method blank 03LVJ056-MB1 contained the common laboratory contaminants Methylene Chloride and Acetone at levels less than the CRQL.
8. Internal standard area criteria were not met for sample B16WB4 MSD. The analysis of associated matrix spike sample fulfills the reanalysis requirement of sample B16WB4 MSD.
9. A spectral search was conducted for the compound 2-Pentanone; this compound was not identified in the sample.
10. "I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."


J. Michael Taylor
President

Lionville Laboratory Incorporated

som\group\data\voa\tnu-hanford\0305-403.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 17 pages.

6/29/03
Date

GLOSSARY

DATA QUALIFIERS

- U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
- J = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
- E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- D = Identifies all compounds identified in an analysis at a secondary dilution factor.
- I = Interference.
- NQ = Result qualitatively confirmed but not able to quantify.
- A = Indicates that a TIC is a suspected aldol-condensation product.
- N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
- X = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
- Y = Additional qualifiers used as required are explained in the case narrative.

GLOSSARY

ABBREVIATIONS

BS	=	Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.
BSD	=	Indicates blank spike duplicate.
MS	=	Indicates matrix spike.
MSD	=	Indicates matrix spike duplicate.
DL	=	Suffix added to sample number to indicate that results are from a diluted analysis.
NA	=	Not Applicable.
DF	=	Dilution Factor.
NR	=	Not Required.
SP, Z	=	Indicates Spiked Compound.

mmz\10-94\gloss.bna



TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quan modifications or integrations are performed routinely to improve the data quality for a variety of technical reasons. Documentation of these modifications should be clear and concise. The following "flags" are used to indicate the technical reasons for quan modifications:

- MP - Missed Peak: manually added peak not found by automatic quan program.
- PA - Peak Assignment: quan report was changed to reflect correct peak assignment.
- RI - Routine Integration: routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the dichlorobenzene isomers on the VOA packed column and benzo(b)fluoranthene/benzo(k)fluoranthene which are poorly resolved on the BNA column.
- SP - Split Peak: the automatic integration improperly split the peak; a manual integration was performed to get the correct area.
- CB - Coelution/Background: peak was manually integrated to eliminate contribution from coeluting compounds, background signal, or other interference.
- PI - Proper Integration: a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.

Lionville Laboratory, Inc.

Volatiles by GC/MS, HSL List

Report Date: 06/20/03 09:14

RfW Batch Number: 0305L403

Client: TNUHANFORD F03-006 H2208 Work Order: 11343606001 Page: 1a

Cust ID:		B16WB4		B16WB4		B16WB4		VBLKSE		VBLKSE BS		VBLKRT			
Sample		RFW#:		002		002 MS		002 MSD		03LVJ057-MB1		03LVJ057-MB1		03LVJ056-MB1	
Information		Matrix:		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
		D.F.:		1.00		1.09		1.04		1.00		1.00		1.00	
		Units:		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Toluene-d8		99 %		100 %		106 %		100 %		98 %		98 %			
Surrogate Bromofluorobenzene		108 %		119 %		126 * %		114 %		107 %		113 %			
Recovery 1,2-Dichloroethane-d4		100 %		136 %		140 %		99 %		98 %		123 %			
=====fl=====		=====fl=====		=====fl=====		=====fl=====		=====fl=====		=====fl=====		=====fl=====			
Chloromethane		10 U		11 U		11 U		10 U		10 U		10 U			
Bromomethane		10 U		11 U		11 U		10 U		10 U		10 U			
Vinyl Chloride		10 U		11 U		11 U		10 U		10 U		10 U			
Chloroethane		10 U		11 U		11 U		10 U		10 U		10 U			
Methylene Chloride		5 U		7 B		6 B		5 U		5 U		1 J			
Acetone		2 J		11 U		8 JB		10 U		10 U		7 J			
Carbon Disulfide		5 U		6 U		6 U		5 U		5 U		5 U			
1,1-Dichloroethene		5 U		127 %		136 %		5 U		98 %		5 U			
1,1-Dichloroethane		5 U		6 U		6 U		5 U		5 U		5 U			
1,2-Dichloroethene (total)		5 U		6 U		6 U		5 U		5 U		5 U			
Chloroform		5 U		6 U		6 U		5 U		5 U		5 U			
1,2-Dichloroethane		5 U		6 U		6 U		5 U		5 U		5 U			
2-Butanone		10 U		11 U		11 U		10 U		10 U		10 U			
1,1,1-Trichloroethane		5 U		6 U		6 U		5 U		5 U		5 U			
Carbon Tetrachloride		5 U		6 U		6 U		5 U		5 U		5 U			
Bromodichloromethane		5 U		6 U		6 U		5 U		5 U		5 U			
1,2-Dichloropropane		5 U		6 U		6 U		5 U		5 U		5 U			
cis-1,3-Dichloropropene		5 U		6 U		6 U		5 U		5 U		5 U			
Trichloroethene		5 U		93 %		97 %		5 U		105 %		5 U			
Dibromochloromethane		5 U		6 U		6 U		5 U		5 U		5 U			
1,1,2-Trichloroethane		5 U		6 U		6 U		5 U		5 U		5 U			
Benzene		5 U		96 %		100 %		5 U		94 %		5 U			
Trans-1,3-Dichloropropene		5 U		6 U		6 U		5 U		5 U		5 U			
Bromoform		5 U		6 U		6 U		5 U		5 U		5 U			
4-Methyl-2-pentanone		10 U		11 U		11 U		10 U		10 U		10 U			
2-Hexanone		10 U		11 U		11 U		10 U		10 U		10 U			
Tetrachloroethene		5 U		6 U		6 U		5 U		5 U		5 U			
1,1,2,2-Tetrachloroethane		5 U		6 U		6 U		5 U		5 U		5 U			
Toluene		5 U		107 %		117 %		5 U		98 %		5 U			

* = Outside of EPA CLP QC limits.

Cust ID: B16WB4 B16WB4 B16WB4 VBLKSE VBLKSE BS VBLKRT

RFW#: 002 002 MS 002 MSD 03LVJ057-MB1 03LVJ057-MB1 03LVJ056-MB1

Chlorobenzene	5	U	105	%	111	%	5	U	100	%	5	U
Ethylbenzene	5	U	6	U	6	U	5	U	5	U	5	U
Styrene	5	U	6	U	6	U	5	U	5	U	5	U
Xylene (total)	5	U	6	U	6	U	5	U	5	U	5	U
N-butylbenzene	5	U	6	U	6	U	5	U	5	U	5	U

*= Outside of EPA CLP QC limits.

Volatiles by GC/MS, HSL List

Report Date: 06/20/03 09:14

Client: TNUHANFORD F03-006 H2208 Work Order: 11343606001 Page: 2a

Sample	RFW#:	03LVJ056-MB1
Information	Matrix:	SOIL
	D.F.:	1.00
	Units:	ug/Kg

[illegible]

*= Outside of EPA CLP QC limits.

Cust ID: VBLKRT BS

RFW#: 03LVJ056-MB1

Chlorobenzene	104	%
Ethylbenzene	5	U
Styrene	5	U
Xylene (total)	5	U
N-butylbenzene	5	U

*= Outside of EPA CLP QC limits.

1E
VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B16WB4

Lab Name: Lionville Labs, Inc. Contract: 11343606001

Lab Code: Lionvi Case No.: _____

SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL

Lab Sample ID: 0305L403-002

Sample wt/vol: 5.00 (g/mL) G

Lab File ID: 1052005

Level: (low/med) LOW

Date Received: 05/14/03

% Moisture: not dec. 4

Date Analyzed: 05/20/03

Column: (pack/cap) CAP

Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 1

(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALKANE	7.360	6	JB

1E
VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKSE

Lab Name: Lionville Labs, Inc. Contract: 11343606001

Lab Code: Lionvi Case No.: _____

SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL

Lab Sample ID: 03LVJ057-MB1

Sample wt/vol: 5.00 (g/mL) G

Lab File ID: 1052004

Level: (low/med) LOW

Date Received: 05/20/03

% Moisture: not dec. 0

Date Analyzed: 05/20/03

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALKANE	7.263	8	J

1E
VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKRT

Lab Name: Lionville Labs, Inc. Contract: 11343606001

Lab Code: Lionvi Case No.: _____

SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL

Lab Sample ID: 03LVJ056-MB1

Sample wt/vol: 5.00 (g/mL) G

Lab File ID: i051706

Level: (low/med) LOW

Date Received: 05/17/03

% Moisture: not dec. 0

Date Analyzed: 05/17/03

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

Q30SL403

A-C D

F-G

4 I J

Client <u>TNU-Hamford</u>	Refrigerator #	1	2						2	2	2				
Est. Final Proj. Sampling Date	#/Type Container	Liquid	3												
Project # <u>11343-606-001-999-00</u>		Solid	3ag	1ag						1ag	1ag	1ag			
Project Contact/Phone #	Volume	Liquid													
Lionville Laboratory Project Manager <u>Delette Johnson</u>		Solid	40	250						120	60	120			
QC <u>SPEC</u> Del <u>STD</u> TAT <u>30 days</u>	Preservatives		-	-											
Date Rec'd <u>5-14-03</u> Date Due <u>6-13-03</u>	ANALYSES REQUESTED →	ORGANIC						INORG		Hex	Chrom	NO2/	NO3	Oil +	Grease
		VOA (17)	BNA (20)	Pest/PCB	Herb	Alcohol	Grease	Metal	CN						

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (S)		Matrix	Date Collected	Time Collected	Lionville Laboratory Use Only																																																																																																																																																																																																																																																																																																														
			MS	MSD				H24H	0625X	0200	0600	0605	0608	0610	0615	0620	0625	0630	0635	0640	0645	0650	0655	0700	0705	0710	0715	0720	0725	0730	0735	0740	0745	0750	0755	0800	0805	0810	0815	0820	0825	0830	0835	0840	0845	0850	0855	0900	0905	0910	0915	0920	0925	0930	0935	0940	0945	0950	0955	1000	1005	1010	1015	1020	1025	1030	1035	1040	1045	1050	1055	1100	1105	1110	1115	1120	1125	1130	1135	1140	1145	1150	1155	1200	1205	1210	1215	1220	1225	1230	1235	1240	1245	1250	1255	1300	1305	1310	1315	1320	1325	1330	1335	1340	1345	1350	1355	1400	1405	1410	1415	1420	1425	1430	1435	1440	1445	1450	1455	1500	1505	1510	1515	1520	1525	1530	1535	1540	1545	1550	1555	1600	1605	1610	1615	1620	1625	1630	1635	1640	1645	1650	1655	1700	1705	1710	1715	1720	1725	1730	1735	1740	1745	1750	1755	1800	1805	1810	1815	1820	1825	1830	1835	1840	1845	1850	1855	1900	1905	1910	1915	1920	1925	1930	1935	1940	1945	1950	1955	2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050	2055	2100	2105	2110	2115	2120	2125	2130	2135	2140	2145	2150	2155	2200	2205	2210	2215	2220	2225	2230	2235	2240	2245	2250	2255	2300	2305	2310	2315	2320	2325	2330	2335	2340	2345	2350	2355	2400	2405	2410	2415	2420	2425	2430	2435	2440	2445	2450	2455	2500	2505	2510	2515	2520	2525	2530	2535	2540	2545	2550	2555	2600	2605	2610	2615	2620	2625	2630	2635	2640	2645	2650	2655	2700	2705	2710	2715	2720	2725	2730	2735	2740	2745	2750	2755	2800	2805	2810	2815	2820	2825	2830	2835	2840	2845	2850	2855	2900	2905	2910	2915	2920	2925	2930	2935	2940	2945	2950	2955	3000	3005	3010	3015	3020	3025	3030	3035	3040	3045	3050

Special Instructions: SAF # F03-006

Ren Matrix GC

DATE/REVISIONS:

S-16-02

1. Cancel - 001 per Client

2. Sample - 002 Add Ag, As, B, Ba, Be, Bi, Cd, Cu

3. Hg, Ni, Pb, Sb, Se / Zr, Cl, F, NO, NO₂, PO₄

4. SO_4 $\text{I NH}_3\text{N}$ I CNTO , I PH

5.

6.

Relinquished by	Received by	Date	Time
Healy	D. Smith	5-14-03	0935

Relinquished by JOHN DOE	Received by JOHN DOE	Date	Time
WASTE		ORIGINAL	
		REWRITTEN	

Discrepancies Between
Samples Labels and
COC Record? Y or (N)
NOTES:

Lionville Laboratory Use Only	
Samples were:	Tamper Resistant Seal was
1) Shipped <input checked="" type="checkbox"/> or	1) Present on Outer
Hand Delivered _____	Package <input checked="" type="checkbox"/> or N
Airbill # _____	2) Unbroken on Outer
<u>7932 4751 3291</u>	Package <input checked="" type="checkbox"/> or N
2) Ambient or <u>Chilled</u>	3) Present on Sample
	<input checked="" type="checkbox"/> or N
3) Received in Good	4) Unbroken on
Condition <input checked="" type="checkbox"/> or N	Sample <input checked="" type="checkbox"/> or N
4) Samples	COC Record Present
Properly Preserved	Upon Sample Rec't
<input checked="" type="checkbox"/> or N	<input checked="" type="checkbox"/> or N
5) Received Within	Cooler
Holding Times	Temp. <u>12</u> °C
<input checked="" type="checkbox"/> or N	

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-86		Page 1 of 1	
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N Data Turnaround 30 Days	
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-37 (C4106); (237.5'-240')		SAF No. F03-006		Air Quality <input type="checkbox"/>			
Ice Chest No. <u>ERC 02 404</u> <u>ELC 49-0050/51303</u>		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Government Vehicle			
Shipped To <u>JMS/12/03</u> <u>Waste Sampling & Characterization</u> <u>Recrea</u>		Offsite Property No. <u>A030 229</u> <u>N/A</u>		Bill of Lading/Air Bill No. <u>SEE OSPC</u> <u>N/A</u>					
POSSIBLE SAMPLE HAZARDS/REMARKS Special Handling and/or Storage <u>20030601</u>				Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	
				Type of Container	Gs*	aG	Gs*	G/P	
				No. of Container(s)	3	1	3	✓	
				Volume	40mL	250mL	40mL	500mL	
SAMPLE ANALYSIS				See item (1) in Special Instructions	See item (2) in Special Instructions	See item (3) in Special Instructions	See item (4) in Special Instructions		
Sample No.	Matrix *	Sample Date	Sample Time						
B16WB3	SOIL	5-7-03	1050	X	X	X	X		
<u>W03000375</u>									
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS	
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		<p>** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.</p> <p>(1) VOA - 8260A (TCL); VOA - 8260A (Add-On) {2-Pentanone, Benzyl alcohol, n-Butylbenzene}</p> <p>(2) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) {2-Butoxyethanol, Tributyl phosphate}; TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G; PCBs - 8082</p> <p>(3) Alcohols, Glycols, & Ketones - 8015 {1-Butanol, Diethyl ether, Ethylene glycol, Methanol}</p> <p>(4) Gamma Spectroscopy {Gross-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Antimony-125, Cesium-134, Radium-226, Radium-228, Th-232, Isotopic Plutonium, Americium-241, Isotopic Uranium, Trace Elements-ICP/MS - 200.8 (Complete) {Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, Uranium}; MEP Metals - 6010A (Add-on) {Bismuth, Boron}; TE Anions - 200.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrile, Phosphate, Sulfate}; Cyanide (Total) - 333.2, Cations (IC) - 300.7 {Nitrogen in ammonium}; pH (6.0) - 9045</p> <p>Personnel not available to relinquish samples from the 3728 Ref # <u>LA</u> on <u>5/13/03</u></p>	
<u>Matthew S. Johnson</u>		<u>5/7/03 1405</u>		<u>LA</u>		<u>5/7/03 1405</u>			
<u>LA</u>		<u>5/8/03 1300</u>		<u>Matthew S. Johnson</u>		<u>5/8/03 1300</u>			
<u>Matthew S. Johnson</u>		<u>5/8/03 1415</u>		<u>R. Nielson</u>		<u>5/8/03 1415</u>			
<u>R. Nielson</u>		<u>5/8/03 1415</u>		<u>Ref # 1A 3728</u>		<u>5/8/03 1415</u>			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		<p>Matrix *</p> <p>S=Soil SE=Sediment SO=Solid Sl=Sludge W=Water O=Oil A=Air DS=Drum Solids D=Drum Liquids L=Liquid V=Vegetation X=Other</p>	
<u>REF 1A 3728</u>		<u>5/30/03 1300</u>		<u>SGATE/SLH</u>		<u>5/30/03 1300</u>			
<u>SJGALE/SLH</u>		<u>5/30/03 1300</u>		<u>FED EX</u>					
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time			
<u>SGATE/SLH</u>		<u>5/30/03 1300</u>		<u>FED EX</u>					
LABORATORY SECTION		Received By <u>FED EX</u>		Date/Time <u>5/14/03 0935</u>		Title <u>2 X/1000 5/14/03 0935</u>			
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By		Date/Time			

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					F03-006-72		Page 1 of 1		
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N		Data Turnaround 45 Days	
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-37 (C4106); (272.5'-275')				SAF No. F03-006		Air Quality <input type="checkbox"/>			
Ice Chest No. ERC 02 404		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express					
Shipped To RELRA EDERLINE SERVICES (Formerly TMA) 4/22/03		Offsite Property No. A030229				Bill of Lading/Air Bill No. SEE OSPC					
POSSIBLE SAMPLE HAZARDS/REMARKS Special Handling and/or Storage				Preservation	Cool 4C	Cool 4C	Cool 4C	None	None		
				Type of Container	aG	aG	aG	aG	aG		
				No. of Container(s)	1	1	1	1	1		
				Volume	120mL	60mL	120mL	60mL	60mL		
SAMPLE ANALYSIS				Chromium Hex - 7196	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (1) in Special Instructions.	Tritium - H3			
Sample No.	Matrix *	Sample Date	Sample Time								
B16W89	SOIL	5/8/03	1025	X	X	X					
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS 4/22/03			
Relinquished By/Removed From RELRA		Date/Time 5-8-03 1415		Received By/Stored In RELRA		Date/Time 5-8-03 1415		<p>** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.</p> <p>(1) Technetium-99; Strontium-89,90 - Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-129; Nickel-63; Neptunium-237</p> <p>Personnel not available to relinquish samples from the 3728 Ref # 1A on 5/13/03</p>			
Relinquished By/Removed From RELRA		Date/Time 5/8/03 1415		Received By/Stored In RELRA		Date/Time 5/8/03 1415					
Relinquished By/Removed From RELRA		Date/Time 5/13/03 1300		Received By/Stored In RELRA		Date/Time 5/13/03 1300					
Relinquished By/Removed From RELRA		Date/Time 5/13/03 1300		Received By/Stored In FED EX		Date/Time					
Relinquished By/Removed From RELRA		Date/Time 5/14/03 0935		Received By/Stored In RELRA		Date/Time 5/14/03 0935					
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time					
LABORATORY SECTION		Received By		Title				Date/Time			
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By				Date/Time			

LIONVILLE LABORATORY INCORPORATED

SAMPLE RECEIPT CHECKLIST

CLIENT: TNU Handford

Purchase Order/Project:

DATE: 5-14-03

RF# / SOW# / Release #: F03-006

Laboratory SDG #:

03051403

NOTE: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION

- | | | | | |
|--|---|-----------------------------|---|--|
| 1. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 2. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 3. Airbill # recorded? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 4. All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 5. Sample containers are intact? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 7. All samples on coc received? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 8. All sample label information matches coc? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 10. Shipment meets LVL1 Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 11. Where applicable, bar code labels are affixed to coc? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 12. coc signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 13. coc will be faxed or emailed to client? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 14. Project Manager/Client contacted concerning discrepancies? (name/date) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |

Cooler # / temp (°C) and Comments:

ERC 02-404 / 1.2°

Laboratory Sample Custodian:

Laboratory Project Manager:

[Signature]

Lionville Laboratory, Inc.
BNA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2208

DATE RECEIVED: 05/14/03

LVL LOT # :0305L403

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B16WB4	002	S	03LE0580	05/08/03	05/15/03	06/09/03
B16WB4	002 MS	S	03LE0580	05/08/03	05/15/03	06/09/03
B16WB4	002 MSD	S	03LE0580	05/08/03	05/15/03	06/09/03

LAB QC:

SBLKTO	MB1	S	03LE0580	N/A	05/15/03	06/09/03
SBLKTO	MB1 BS	S	03LE0580	N/A	05/15/03	06/09/03





Client: TNU-HANFORD F03-006
LVL #: 0305L403
SDG/SAF # H2208/F03-006

W.O. #: 11343-606-001-9999-00
Date Received: 05-14-2003


SEMIVOLATILE

One (1) soil sample was collected on 05-08-2003.

The sample and its associated QC samples were extracted according to Lionville Laboratory OPs based on method 3550 on 05-15-2003 and analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8270C for client specified Semivolatile target compounds on 06-09-2003.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. All results presented in this report are derived from a sample that met LvLI's sample acceptance policy.
2. The sample was extracted and analyzed within required holding time.
3. Non-target compounds were detected in the sample.
4. Six (6) of thirty (30) surrogate recoveries were outside EPA QC limits. The surrogate recovery criteria were not met for sample B16WB4 MS and it appears to be double surrogated. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
5. One (1) of twenty-two (22) matrix spike recoveries was outside EPA QC limits.
6. All blank spike recoveries were within EPA QC limits.
7. The method blank contained the common laboratory contaminant Bis (2-Ethylhexyl) phthalate at a level less than the CRQL.
8. Internal standard area and retention time criteria were met.
9. Manual integrations are performed according to OP 21-06A-125 to produce quality data with the utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in the Glossary ("Technical Flags For Manual Integration").
10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.


for J. Michael Taylor
President
Lionville Laboratory Incorporated


Date

som\gorup\data\bna\tnu-hanford-0305-403.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 16 pages.

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 03msdr

Initiator: Robert G. Cardin
Date: 6/10/03
Client: TNW Hartford Fa3006

Batch: 03052403
Samples: 0025
Method: SW846/MCAWW/CLP/

Parameter: 0625K
Matrix: Soil
Prep Batch: 03LE0580

1. Reason for SDR

a. COC Discrepancy ☐ Tech Profile Error ☐ Client Request ☐ Sampler Error on C-O-C
☐ Transcription Error ☐ Wrong Test Code ☐ Other

b. General Discrepancy

☐ Missing Sample/Extract ☐ Container Broken ☐ Wrong Sample Pulled ☐ Label ID's Illegible
☐ Hold Time Exceeded ☐ Insufficient Sample ☐ Preservation Wrong ☐ Received Past Hold
☐ Improper Bottle Type ☐ Not Amenable to Analysis

Note*: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. Problem (Include all relevant specific results; attach data if necessary)

All surrogates outside QC limits

All other samples OK

2. Known or Probable Causes(s)

Appears sample spiked with 2x surrogate

3. Discussion and Proposed Action

Other Description:

☐ Re-log
☐ Entire Batch
☐ Following Samples: _____
☐ Re-leach
☐ Re-extract
☐ Re-digest
☐ Revise EDD
☐ Change Test Code to _____
☐ Place On/Take Off Hold (circle)

Manakand Report

4. Project Manager Instructions...signature/date:

☒ Concur with Proposed Action
☐ Disagree with Proposed Action; See Instruction
☐ Include in Case Narrative
☐ Client Contacted:
Date/Person _____
☐ Add
☐ Cancel

5. Final Action...signature/date:

☒ Verified re-[log][leach][extract][digest][analysis] (circle)
☒ Included in Case Narrative
☐ Hard Copy COC Revised
☐ Electronic COC Revised
☐ EDD Corrections Completed

Other Explanation:

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route Distribution of Completed SDR
☒ Initiator
☒ Lab General Manager: M. Taylor
☒ Project Mgr: Stone/Johnson/Haslett
☒ Technical Mgr: Wesson/Daniels
☒ QA (file)
☐ Data Management: Feldman
☐ Sample Prep: Beegle/Kiger

Route Distribution of Completed SDR
☐ Metals: Beegle
☐ Inorganic: Perrone
☐ GC/LC: Kiger
☒ MS: Rychlak/Layman
☐ Log-in: Melnic
☐ Admin: Soos
☐ Other: _____

GLOSSARY

DATA QUALIFIERS

- U** = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
- J** = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
- E** = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- D** = Identifies all compounds identified in an analysis at a secondary dilution factor.
- I** = Interference.
- NQ** = Result qualitatively confirmed but not able to quantify.
- A** = Indicates that a TIC is a suspected aldol-condensation product.
- N** = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
- X** = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
- Y** = Additional qualifiers used as required are explained in the case narrative.

GLOSSARY

ABBREVIATIONS

BS	=	Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.
BSD	=	Indicates blank spike duplicate.
MS	=	Indicates matrix spike.
MSD	=	Indicates matrix spike duplicate.
DL	=	Suffix added to sample number to indicate that results are from a diluted analysis.
NA	=	Not Applicable.
DF	=	Dilution Factor.
NR	=	Not Required.
SP, Z	=	Indicates Spiked Compound.

mmz\10-94\gloss.bna



TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quan modifications or integrations are performed routinely to improve the data quality for a variety of technical reasons. Documentation of these modifications should be clear and concise. The following "flags" are used to indicate the technical reasons for quan modifications:

- MP - Missed Peak: manually added peak not found by automatic quan program.
- PA - Peak Assignment: quan report was changed to reflect correct peak assignment.
- RI - Routine Integration: routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the dichlorobenzene isomers on the VOA packed column and benzo(b)fluoranthene/benzo(k)fluoranthene which are poorly resolved on the BNA column.
- SP - Split Peak: the automatic integration improperly split the peak; a manual integration was performed to get the correct area.
- CB - Coelution/Background: peak was manually integrated to eliminate contribution from coeluting compounds, background signal, or other interference.
- PI - Proper Integration: a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, Special List

Report Date: 06/19/03 16:27

RFW Batch Number: 0305L403

Client: TNUHANFORD F03-006 H2208

Work Order: 11343606001

Page: 1a

Cust ID:		B16WB4	B16WB4	B16WB4	SBLKTO	SBLKTO BS
Sample		RFW#: 002	002 MS	002 MSD	03LE0580-MB1	03LE0580-MB1
Information		Matrix: SOIL	SOIL	SOIL	SOIL	SOIL
		D.F.: 1.00	1.00	1.00	1.00	1.00
		Units: UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate Recovery	Nitrobenzene-d5	80 %	150 * %	64 %	70 %	74 %
	2-Fluorobiphenyl	77 %	153 * %	69 %	69 %	78 %
	Terphenyl-d14	103 %	227 * %	98 %	95 %	100 %
	Phenol-d5	82 %	151 * %	66 %	70 %	74 %
	2-Fluorophenol	70 %	122 * %	58 %	61 %	65 %
	2,4,6-Tribromophenol	69 %	174 * %	77 %	66 %	74 %
=====fl=====fl=====fl=====fl=====fl=====fl=====fl=====						
Phenol		350 U	69 %	62 %	330 U	74 %
bis(2-Chloroethyl)ether		350 U	350 U	350 U	330 U	330 U
2-Chlorophenol		350 U	65 %	56 %	330 U	64 %
1,3-Dichlorobenzene		350 U	350 U	350 U	330 U	330 U
1,4-Dichlorobenzene		350 U	65 %	55 %	330 U	67 %
1,2-Dichlorobenzene		350 U	350 U	350 U	330 U	330 U
2-Methylphenol		350 U	350 U	350 U	330 U	330 U
2,2'-oxybis(1-Chloropropane)		350 U	350 U	350 U	330 U	330 U
3- and/or 4-Methylphenol		350 U	350 U	350 U	330 U	330 U
N-Nitroso-di-n-propylamine		350 U	74 %	63 %	330 U	70 %
Hexachloroethane		350 U	350 U	350 U	330 U	330 U
Nitrobenzene		350 U	350 U	350 U	330 U	330 U
Isophorone		350 U	350 U	350 U	330 U	330 U
2-Nitrophenol		350 U	350 U	350 U	330 U	330 U
2,4-Dimethylphenol		350 U	350 U	350 U	330 U	330 U
bis(2-Chloroethoxy)methane		350 U	350 U	350 U	330 U	330 U
2,4-Dichlorophenol		350 U	350 U	350 U	330 U	330 U
1,2,4-Trichlorobenzene		350 U	73 %	58 %	330 U	70 %
Naphthalene		350 U	350 U	350 U	330 U	330 U
4-Chloroaniline		350 U	350 U	350 U	330 U	330 U
Hexachlorobutadiene		350 U	350 U	350 U	330 U	330 U
4-Chloro-3-methylphenol		350 U	75 %	67 %	330 U	68 %
2-Methylnaphthalene		350 U	350 U	350 U	330 U	330 U
Hexachlorocyclopentadiene		350 U	350 U	350 U	330 U	330 U
2,4,6-Trichlorophenol		350 U	350 U	350 U	330 U	330 U
2,4,5-Trichlorophenol		860 U	860 U	860 U	840 U	840 U

*= Outside of EPA CLP QC limits.

Cust ID:	B16WB4	B16WB4	B16WB4	SBLKTO	SBLKTO BS
RFW#:	002	002 MS	002 MSD	03LE0580-MB1	03LE0580-MB1
2-Chloronaphthalene	350 U	350 U	350 U	330 U	330 U
2-Nitroaniline	860 U	860 U	860 U	840 U	840 U
Dimethylphthalate	350 U	350 U	350 U	330 U	330 U
Acenaphthylene	350 U	350 U	350 U	330 U	330 U
2,6-Dinitrotoluene	350 U	350 U	350 U	330 U	330 U
3-Nitroaniline	860 U	860 U	860 U	840 U	840 U
Acenaphthene	350 U	78 %	68 %	330 U	75 %
2,4-Dinitrophenol	860 U	860 U	860 U	840 U	840 U
4-Nitrophenol	860 U	79 %	68 %	840 U	66 %
Dibenzofuran	350 U	350 U	350 U	330 U	330 U
2,4-Dinitrotoluene	350 U	93 * %	82 %	330 U	83 %
Diethylphthalate	350 U	350 U	350 U	330 U	330 U
4-Chlorophenyl-phenylether	350 U	350 U	350 U	330 U	330 U
Fluorene	350 U	350 U	350 U	330 U	330 U
4-Nitroaniline	860 U	860 U	860 U	840 U	840 U
4,6-Dinitro-2-methylphenol	860 U	860 U	860 U	840 U	840 U
N-Nitrosodiphenylamine (1)	350 U	350 U	350 U	330 U	330 U
4-Bromophenyl-phenylether	350 U	350 U	350 U	330 U	330 U
Hexachlorobenzene	350 U	350 U	350 U	330 U	330 U
Pentachlorophenol	860 U	96 %	87 %	840 U	88 %
Phenanthrene	350 U	350 U	350 U	330 U	330 U
Anthracene	350 U	350 U	350 U	330 U	330 U
Carbazole	350 U	350 U	350 U	330 U	330 U
Di-n-butylphthalate	19 J	350 U	350 U	330 U	330 U
Fluoranthene	350 U	350 U	350 U	330 U	330 U
Pyrene	350 U	98 %	90 %	330 U	97 %
Butylbenzylphthalate	350 U	350 U	350 U	330 U	330 U
3,3'-Dichlorobenzidine	350 U	350 U	350 U	330 U	330 U
Benzo(a)anthracene	350 U	350 U	350 U	330 U	330 U
Chrysene	350 U	350 U	350 U	330 U	330 U
bis(2-Ethylhexyl)phthalate	78 JB	82 JB	61 JB	34 J	38 JB
Di-n-octyl phthalate	350 U	350 U	350 U	330 U	330 U
Benzo(b)fluoranthene	350 U	350 U	350 U	330 U	330 U
Benzo(k)fluoranthene	350 U	350 U	350 U	330 U	330 U
Benzo(a)pyrene	350 U	350 U	350 U	330 U	330 U
Indeno(1,2,3-cd)pyrene	350 U	350 U	350 U	330 U	330 U
Dibenz(a,h)anthracene	350 U	350 U	350 U	330 U	330 U
Benzo(g,h,i)perylene	350 U	350 U	350 U	330 U	330 U
2-Butoxyethanol	350 U	350 U	350 U	330 U	330 U
Benzyl alcohol	350 U	350 U	350 U	330 U	330 U

*= Outside of EPA CLP QC limits.

Cust ID: B16WB4 B16WB4 B16WB4 SBLKTO SBLKTO BS

RFW#: 002 002 MS 002 MSD 03LE0580-MB1 03LE0580-MB1

Tributylphosphate 350 U 350 U 350 U 330 U 330 U

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B16WB4

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD F03-006 H2208

Matrix: (soil/water) SOIL

Lab Sample ID: 0305L403-002

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: D060837

Level: (low/med) LOW

Date Received: 05/14/03

% Moisture: 4 decanted: (Y/N)

Date Extracted: 05/15/03

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 06/09/03

Injection Volume: 2.0 (uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.0

CONCENTRATION UNITS:

Number TICs found: 4 (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	3.175	100	JB
2.	ALDOL CONDENSATE	3.549	200	JAB
3.	ALDOL CONDENSATE	4.131	30000	JAB
4.	ALDOL CONDENSATE	5.296	100	JA

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKTO

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD F03-006 H2208

Matrix: (soil/water) SOIL

Lab Sample ID: 03LE0580-MB1

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: D060835

Level: (low/med) LOW

Date Received: 05/15/03

% Moisture: _____ decanted: (Y/N) _____

Date Extracted: 05/15/03

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 06/09/03

Injection Volume: 2.0 (uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

CONCENTRATION UNITS:

Number TICs found: 3

(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=====	=====	=====	=====	=====
1.	UNKNOWN	3.185	70	J
2.	ALDOL CONDENSATE	3.542	100	JA
3.	ALDOL CONDENSATE	4.089	20000	JA

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Q30SL403

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client <u>TNU-Hamford</u> <u>F03-006</u>				Refrigerator #		1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16		17		18		19		20		21		22		23		24		25		26		27		28		29		30		31		32		33		34		35		36		37		38		39		40		41		42		43		44		45		46		47		48		49		50		51		52		53		54		55		56		57		58		59		60		61		62		63		64		65		66		67		68		69		70		71		72		73		74		75		76		77		78		79		80		81		82		83		84		85		86		87		88		89		90		91		92		93		94		95		96		97		98		99		100		101		102		103		104		105		106		107		108		109		110		111		112		113		114		115		116		117		118		119		120		121		122		123		124		125		126		127		128		129		130		131		132		133		134		135		136		137		138		139		140		141		142		143		144		145		146		147		148		149		150		151		152		153		154		155		156		157		158		159		160		161		162		163		164		165		166		167		168		169		170		171		172		173		174		175		176		177		178		179		180		181		182		183		184		185		186		187		188		189		190		191		192		193		194		195		196		197		198		199		200		201		202		203		204		205		206		207		208		209		210		211		212		213		214		215		216		217		218		219		220		221		222		223		224		225		226		227		228		229		230		231		232		233		234		235		236		237		238		239		240		241		242		243		244		245		246		247		248		249		250		251		252		253		254		255		256		257		258		259		260		261		262		263		264		265		266		267		268		269		270		271		272		273		274		275		276		277		278		279		280		281		282		283		284		285		286		287		288		289		290		291		292		293		294		295		296		297		298		299		300		301		302		303		304		305		306		307		308		309		310		311		312		313		314		315		316		317		318		319		320		321		322		323		324		325		326		327		328		329		330		331		332		333		334		335		336		337		338		339		340		341		342		343		344		345		346		347		348		349		350		351		352		353		354		355		356		357		358		359		360		361		362		363		364		365		366		367		368		369		370		371		372		373		374		375		376	
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FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-86		Page 1 of 1	
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N Data Turnaround 30 Days	
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-37 (C4106); (237.5'-240')		SAF No. F03-006		Air Quality <input type="checkbox"/>			
Ice Chest No. <u>ERC 02 404</u> <u>ELC 99-0054/51303</u>		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Government Vehicle			
Shipped To <u>TMD 5/12/03</u> <u>Waste Sampling & Characterization</u> <u>Recrea</u>		Offsite Property No. <u>A030 229</u> <u>N/A</u>		Bill of Lading/Air Bill No. <u>SEE OSPC</u> <u>N/A</u>					
POSSIBLE SAMPLE HAZARDS/REMARKS Special Handling and/or Storage <u>20030601</u>				Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	
				Type of Container	Gs*	aG	Gs*	G/P	
				No. of Container(s)	3	1	3	✓	
				Volume	40mL	250mL	40mL	500mL	
SAMPLE ANALYSIS				See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.		
Sample No.	Matrix *	Sample Date	Sample Time						
B16WB3	SOIL	5-7-03	1050	X	X	X	X		
<u>W03000375</u>									
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		<p>** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.</p> <p>(1) VOA - 8260A (TCL); VOA - 8260A (Add-On) (2-Pentanone, Benzyl alcohol, n-Butylbenzene)</p> <p>(2) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (2-Butoxyethanol, Tributyl phosphate); TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G; PCBs - 8082</p> <p>(3) Alcohols, Glycols, & Ketones - 8015 (1-Butanol, Diethyl ether, Ethylene glycol, Methanol)</p> <p>(4) Gamma Spectroscopy (Grossium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Antimony-125, Cesium-134, Radium-226, Radium-228, Th-232); Isotopic Rhenium, Americium-241, Neptunium, Trace Elements (ICP/MS - 200.8 (Complete) (Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, Uranium); MCP Metals - 0010A (Add-on) (Bismuth, Boron); IC Anions - 200.0 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate); Cyanide (1000) - 335.2; Cations (IC) - 300.7 (Nitrogen in ammonium); pH (Soil) - 0045</p> <p>Personnel not available to relinquish samples from the 3728 Ref # <u>LA</u> on <u>5/13/03</u></p>	
<u>Immunon 5/7/03 1405</u>		<u>5/7/03 1405</u>		<u>Immunon 5/8/03 1300</u>		<u>5/8/03 1300</u>			
<u>Immunon 5/8/03 1300</u>		<u>5/8/03 1300</u>		<u>Immunon 5/8/03 1415</u>		<u>5/8/03 1415</u>			
<u>Immunon 5/8/03 1415</u>		<u>5/8/03 1415</u>		<u>Immunon 5/8/03 1415</u>		<u>5/8/03 1415</u>			
<u>Immunon 5/8/03 1415</u>		<u>5/8/03 1415</u>		<u>Immunon 5/8/03 1415</u>		<u>5/8/03 1415</u>			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time			
<u>REF 1A 3728</u>		<u>5/30/03 1300</u>		<u>REF 1A 3728</u>		<u>5/30/03 1300</u>			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time			
<u>SGALE 5/13/03</u>		<u>1300</u>		<u>SGALE 5/13/03</u>		<u>1300</u>			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time			
<u>SGALE 5/13/03</u>		<u>1300</u>		<u>SGALE 5/13/03</u>		<u>1300</u>			
LABORATORY SECTION		Received By <u>SGALE 5/13/03</u>		Title <u>SGALE 5/13/03</u>		Date/Time			
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By		Date/Time			

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-87		Page 1 of 1			
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N Data Turnaround 30 Days			
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-37 (C4106); (272.5'-275')		SAF No. F03-006		Air Quality <input type="checkbox"/>					
Ice Chest No. ERC 02404 ELC-99-005-44227		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Government Vehicle					
Shipped To MOS 5-12-03 Waste Sampling & Characterization Becca		Offsite Property No. N/A 170-21 A030229		Bill of Lading/Air Bill No. N/A 4/4 5723 SEB-OSPC							
POSSIBLE SAMPLE HAZARDS/REMARKS											
Special Handling and/or Storage				Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C			
				Type of Container	Gs*	gG	Gs*	G/R			
				No. of Container(s)	73	1	73	1			
				Volume	40mL	40mL	40mL	40mL			
SAMPLE ANALYSIS				See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.				
Sample No.	Matrix *	Sample Date	Sample Time								
B16WB4	SOIL	5/8/03	1025	X	X	X	X				
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		<p>** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.</p> <p>(1) VOA - 8260A (TCL); VOA - 8260A (Add-On) (2-Pentanone, Benzyl alcohol, n-Butylbenzene)</p> <p>(2) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (2-Butoxyethanol, Tributyl phosphate); TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G; PCBs - 8082</p> <p>(3) Alcohols, Glycols, & Ketones - 8015 (Diethyl ether, Ethylene glycol, Methanol)</p> <p>(4) Gamma Spectrometry (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Antimony-125, Cesium-134, Radium-226, Radium-228, Th-232); Isotopic</p> <p>Plutonium, Americium-241, Isotopic Uranium, Trace Elements ICP/MS - 200.8 (Complete) (Antimony, Arsenic, Barium, Beryllium, Chromium, Copper, Lead, Mercury, Nickel, Silver, Uranium); ICP Metals - 6010A (Add-on) (Bismuth, Boron); IC Anions - 300.0 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate); Cyanide (Total) - 335.2; Cations (IC) - 300.7 (Nitrogen in ammonium); pH (Soil) = 9045</p> <p>Personnel not available to relinquish samples from the 3728 Ref # 1A on 5/12/03</p>			
J.S. Pope		5/8/03 1120		K. B. B. B.		5/8/03 1120					
K. B. B. B.		5/8/03 1300		M. H. H. H.		5/8/03 1300					
M. H. H. H.		5/8/03 1445		R. N. N. N.		5/8/03 1445					
R. N. N. N.		5/8/03 1445		R. F. F. F.		5/8/03 1445					
R. F. F. F.		5/8/03 1300		S. J. J. J.		5/8/03 1300					
S. J. J. J.		5/8/03 1300		F. E. E. E.		5/8/03 1300					
F. E. E. E.		5/8/03 1300		F. E. E. E.		5/8/03 1300					
LABORATORY SECTION		Received By		Date/Time		Disposed By		Date/Time			
FINAL SAMPLE DISPOSITION		Disposal Method		Date/Time		Disposed By		Date/Time			

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					F03-006-72		Page 1 of 1			
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N		Data Turnaround 45 Days		
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-37 (C4106); (272.5'-275')		SAF No. F03-006		Air Quality <input type="checkbox"/>						
Ice Chest No. ERC 02 404		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express						
Shipped To RECRA EDERLINE SERVICES (Formerly TMA) 4/22/03		Offsite Property No. A030229				Bill of Lading/Air Bill No. SEE OSPL						
POSSIBLE SAMPLE HAZARDS/REMARKS Special Handling and/or Storage				Preservation	Cool 4C	Cool 4C	Cool 4C	None	None			
				Type of Container	aG	aG	aG	aG	aG			
				No. of Container(s)	1	1	1	1	1			
				Volume	120mL	60mL	120mL	60mL	60mL			
SAMPLE ANALYSIS				Chromium Hex - 7196	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (1) in Special Instructions.	Tritium - H3				
Sample No.	Matrix *	Sample Date	Sample Time									
B16W89	SOIL	5/8/03	1025	X	X	X	V				B16WDS	
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS 4/22/03				
Relinquished By/Removed From TH		Date/Time 5-8-03 1415		Received By/Stored In ERC		Date/Time 5-8-03 1415		<p>** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.</p> <p>(1) Technetium-99, Strontium-89,90 - Total Sr, Isotopic Thorium (Thorium-232), Carbon-14, Iodine-129, Nickel-63, Neptunium-237</p> <p>4/22/03</p> <p>Personnel not available to relinquish samples from the 3728 Ref # 1A on 5/13/03</p>				
Relinquished By/Removed From R. Nielsen		Date/Time 5/8/03 1415		Received By/Stored In Ref # 1A		Date/Time 5/8/03 1415						
Relinquished By/Removed From REF 1A		Date/Time 5/13/03 1300		Received By/Stored In SGALE		Date/Time 5/13/03 1300						
Relinquished By/Removed From SGALE		Date/Time 5/13/03 1300		Received By/Stored In FED EX		Date/Time						
Relinquished By/Removed From Ref 1A		Date/Time 5/14/03 0935		Received By/Stored In Ref 1A		Date/Time 5/14/03 0935						
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time						
LABORATORY SECTION		Received By		Title				Date/Time				
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By				Date/Time				

LIONVILLE LABORATORY INCORPORATED

SAMPLE RECEIPT CHECKLIST

CLIENT: TNU Handford

Trace Order/Project:

DATE: 5-14-03

FW/SOW# / Release #: F03-006

Laboratory SDG #:

03051403

NOTE: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION

- | | | | | |
|--|---|-----------------------------|---|--|
| 1. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 2. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 3. Airbill # recorded? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 4. All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 5. Sample containers are intact? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 7. All samples on coc received? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 8. All sample label information matches coc? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 10. Shipment meets LVL1 Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 11. Where applicable, bar code labels are affixed to coc? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 12. coc signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 13. coc will be faxed or emailed to client? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 14. Project Manager/Client contacted concerning discrepancies? (name/date) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |

Cooler # / temp (°C) and Comments:

ERC 02-404 / 1.2°

Laboratory Sample Custodian:

Laboratory Project Manager:

[Signature]

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Lionville Laboratory, Inc.
DRO ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2208

DATE RECEIVED: 05/14/03

LVL LOT # :0305L403

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B16WB4	002	S	03LE0583	05/08/03	05/15/03	05/19/03

LAB QC:

BLK	MB1	S	03LE0583	N/A	05/15/03	05/20/03
BLK	MB1 BS	S	03LE0583	N/A	05/15/03	05/20/03

Handwritten signature





Analytical Report

Client: TNU-HANFORD F03-006
LVL #: 0305L403
SDG/SAF #: H2208/F03-006

W.O. #: 11343-606-001-9999-00

Date Received: 05-14-03


DIESEL RANGE ORGANICS

One (1) soil sample was collected on 05-08-03.

The sample and its associated QC samples were extracted on 05-15-03 and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 05-19,20-03. The extraction procedure was based on method 3540 and the extracts were analyzed based on method 8015B. The analysis met the intent of method WTPH-D.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
2. All required holding times for extraction and analysis have been met.
3. The method blank was below the reporting limits for all target compounds.
4. All surrogate recoveries were within acceptance criteria.
5. The blank spike recovery was within acceptance criteria.
6. The matrix QC was performed on a sample that was cancelled after the extraction and analysis had been completed. All matrix spike recoveries were within acceptance criteria. Copies of the Sample Discrepancy Report (SDR) and the form 3 have been enclosed.
7. All initial calibrations associated with this data set were within acceptance criteria.
8. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
9. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.


Jaim Daniels
Laboratory Manager
Lionville Laboratory Incorporated


Date

pef\\r:\group\data\dro\tnu hanford\05L-403.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 12 pages.

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 03GC144

Initiator: John Leach
Date: 5/24/03
Client: TNU

Batch: 0305L403
Samples: ms, msb, BGD
Method: SW846/MCAWW/CLPI

Parameter: ODD
Matrix: Soil
Prep Batch: 03LE583

1. Reason for SDR

a. COC Discrepancy ☐ Tech Profile Error ☐ Client Request ☐ Sampler Error on C-O-C
☐ Transcription Error ☐ Wrong Test Code ☐ Other _____

b. General Discrepancy

☐ Missing Sample/Extract ☐ Container Broken ☐ Wrong Sample Pulled ☐ Label ID's Illegible
☐ Hold Time Exceeded ☐ Insufficient Sample ☐ Preservation Wrong ☐ Received Past Hold
☐ Improper Bottle Type ☐ Not Amenable to Analysis

Note: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. Problem (Include all relevant specific results; attach data if necessary)

The matrix QC was performed on the sample but was ^{later} cancelled.

2. Known or Probable Causes(s)

3. Discussion and Proposed Action

☐ Re-log
☐ Entire Batch
☐ Following Samples: _____
☐ Re-leach
☐ Re-extract
☐ Re-digest
☐ Revise EDD
☐ Change Test Code to _____
☐ Place On/Take Off Hold (circle)

Other Description:

Narrate the sample was cancelled after the batch was extracted and the QC is in control.

for the cancelled sample
Include Form 3 in data pkg.

4. Project Manager Instructions...signature/date:

☒ Concur with Proposed Action
☐ Disagree with Proposed Action; See Instruction
☐ Include in Case Narrative
☐ Client Contacted:
Date/Person _____
☐ Add
☐ Cancel

John Johnson 5/27/03

5. Final Action...signature/date:

☒ Verified re-[log][leach][extract][digest][analysis] (circle)
☐ Included in Case Narrative
☐ Hard Copy COC Revised
☐ Electronic COC Revised
☐ EDD Corrections Completed

Other Explanation:

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route Distribution of Completed SDR

☒ Initiator
☒ Lab General Manager: M. Taylor
☒ Project Mgr: Stone/Johnson/Haslett
☒ Technical Mgr: Wesson/Daniels
☒ QA (file)
☐ Data Management: Feldman
☐ Sample Prep: Beegle/Kiger

Route Distribution of Completed SDR

☐ Metals: Beegle
☐ Inorganic: Perrone
☐ GC/LC: Kiger
☐ MS: Rychlak/Layman
☐ Log-in: Melnic
☐ Admin: Soos
☐ Other: _____

SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Lionville Labs, Inc.Contract: 11343-606 001-5551-00
1243-06-01Case No.: TNUHANFORD F03-006 H2208RFW Lot No.: 0305L403-001MATRIX Spike - Sample No.: B16WB3Level: (low/med) LOW

COMPOUND	SPIKE ADDED (mg/Kg)	SAMPLE CONCENTRATION (mg/Kg)	MS CONCENTRATION (mg/Kg)	MS % REC #	QC LIMITS REC
Diesel Range Organics	60.0	0	45.1	75	30 -130

COMPOUND	SPIKE ADDED (mg/Kg)	MSD CONCENTRATION (mg/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD REC
Diesel Range Organics	60.0	49.8	83	10	99 30 -130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 1 outside limitsSpike Recovery: 0 out of 2 outside limits

COMMENTS:



GLOSSARY OF DIESEL RANGE ORGANICS DATA

DATA QUALIFIERS

- U** = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
- J** = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
- E** = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- I** = Interference.

ABBREVIATIONS

- BS** = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD** = Indicates blank spike duplicate.
- MS** = Indicates matrix spike.
- MSD** = Indicates matrix spike duplicate.
- DL** = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
- NA** = Not Applicable.
- DF** = Dilution Factor.
- NR** = Not Required.
- SP** = Indicates Spiked Compound.



GLOSSARY OF DIESEL RANGE ORGANICS DATA

- D** = This flag identifies all compounds identified in an analysis at a secondary dilution factor.
- C** = This flag applies to a compound that has been confirmed by GC/MS.

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Report Date: 06/21/03 14:58

Client: TNUHANFORD F03-006 H2208 Work Order: 11343606001 Page: 1

RFW#:	002	03LE0583-MB1	03LE0583-MB1
Matrix:	SOIL	SOIL	SOIL
D.F.:	1.00	1.00	1.00
Units:	mg/Kg	mg/Kg	mg/Kg

	p-Terphenyl	95 %	109 %	92 %
Diesel Range Organics	12.5 U	12.0 U	74 %	
Kerosene	12.5 U	12.0 U	12.0 U	

7/26/23/0

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS[illegible]

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-86		Page 1 of 1	
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N Data Turnaround 30 Days	
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-37 (C4106); (237.5'-240')		SAF No. F03-006		Air Quality <input type="checkbox"/>			
Ice Chest No. <u>ERC 02 404</u> <u>426-49-00501/51303</u>		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Government Vehicle			
Shipped To <u>INDS/12/03</u> <u>Waste Sampling & Characterization</u> <u>Recra</u>		Offsite Property No. <u>A030 229</u> <u>N/A</u>		Bill of Lading/Air Bill No. <u>SEE OSPC</u> <u>N/A</u>					
POSSIBLE SAMPLE HAZARDS/REMARKS Special Handling and/or Storage <u>20030661</u>				Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	
				Type of Container	Gs*	aG	Gs*	Gp	
				No. of Container(s)	3	1	3	✓	
				Volume	40mL	250mL	40mL	500mL	
SAMPLE ANALYSIS				See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.		
Sample No.	Matrix *	Sample Date	Sample Time						
B16WB3	SOIL	5-7-03	1050	X	X	X	X		
<u>W030000375</u>									
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		<p>** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.</p> <p>(1) VOA - 8260A (TCL); VOA - 8260A (Add-On) (2-Pentanone, Benzyl alcohol, n-Butylbenzene)</p> <p>(2) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (2-Butoxyethanol, Tributyl phosphate); TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G; PCBs - 8082</p> <p>(3) Alcohols, Glycols, & Ketones - 8015 (1-Butanol, Diethyl ether, Ethylene glycol, Methanol)</p> <p>(4) Gamma Spectroscopy (Gross-199, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Antimony-125, Cesium-134, Radium-226, Radium-228, Th-230); Isotopic Plutonium, Americium-241; Isotopic Uranium; Trace Elements-ICP/MS - 200.8 (Complete) (Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, Uranium); ICP Metals - 8010A (Add-on) (Bismuth, Boron); IC Anions - 300.0 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate); Cyanide (TDN) - 333.2; Cations (IC) - 300.7 (Nitrogen in ammonium); pH (Soil) - 9045</p> <p>Personnel not available to relinquish samples from the 3728 Ref # <u>1A</u> on <u>5/13/03</u></p>	
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time			
LABORATORY SECTION		Received By <u>Medex</u> <u>5/4/03/0935</u>		Disposal Method		Disposed By		Date/Time	
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By		Date/Time			

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-87		Page 1 of 1	
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N Data Turnaround 30 Days	
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-37 (C4106); (272.5'-275')		SAF No. F03-006		Air Quality <input type="checkbox"/>			
Ice Chest No. ERC 02 404 ERC 99-005		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Government Vehicle			
Shipped To MOS 5-12-03 Waste Sampling & Characterization Pecra		Offsite Property No. A030 229		Bill of Lading/Air Bill No. STA 6405723		SEB-OSPC			
POSSIBLE SAMPLE HAZARDS/REMARKS Special Handling and/or Storage				Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	
				Type of Container	Gs*	AG	Gs*	GR	
				No. of Container(s)	13	1	13	13	
				Volume	40mL	40mL	40mL	40mL	
SAMPLE ANALYSIS				See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.		
Sample No.	Matrix *	Sample Date	Sample Time						
B16WB4	SOIL	5/8/03	1025	X	X	X	X		
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By/Removed From J-S. Pope 5/8/03 1120		Received By/Stored In P. B. 5/8/03 1120		<p>** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.</p> <p>(1) VOA - 8260A (TCL); VOA - 8260A (Add-On) (2-Pentanone, Benzyl alcohol, n-Butylbenzene)</p> <p>(2) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (2-Butoxyethanol, Tributyl phosphate); TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G; PCBs - 8082</p> <p>(3) Alcohols, Glycols, & Ketones - 8015 (Diethyl ether, Ethylene glycol, Methanol)</p> <p>(4) Gamma Spectrometry (Cesium-132, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Antimony-125, Cesium-134, Radium-226, Radium-228, Tin-126); Isotopic Phosphorus, Americium-241, Isotopic Uranium, Trace Elements ICP/MS - 200.8 (Complete) (Antimony, Arsenic, Barium, Beryllium, Chromium, Copper, Lead, Mercury, Nickel, Silver, Uranium); ICP Metals 6010A (Add-on) (Bismuth, Boron); IC-Anions - 300.8 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate); Cyanide (Total) - 335.2; Cations (IC) - 300.7 (Nitrogen in ammonium); pH (Soil) - 9045</p> <p>Personnel not available to relinquish samples from the 3728 Ref # 1A on 5/12/03</p>				S=Soil SE=Solid SO=Solid SI=Sludge W=Water O=Oil A=Air D=Drying Solids DL=Dry Liquids L=Liquid V=Vegetation X=Other	
Relinquished By/Removed From P. B. 5/8/03 1300		Received By/Stored In P. B. 5/8/03 1300							
Relinquished By/Removed From R. Nickson 5/8/03		Received By/Stored In R. Nickson 5/8/03 1415							
Relinquished By/Removed From REF 1A 3728 5/13/03 1300		Received By/Stored In S. O. 5/13/03 1300							
Relinquished By/Removed From S. O. 5/13/03 1300		Received By/Stored In FED EX							
LABORATORY SECTION		Received By K. E. 5/14/03 0935		Date/Time 5/14/03 0935					
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By				Date/Time	

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						F03-006-72		Page 1 of 1		
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N		Data Turnaround 45 Days		
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-37 (C4106); (272.5'-275')		SAF No. F03-006		Air Quality <input type="checkbox"/>						
Ice Chest No. ERC 02 404		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express						
Shipped To RELRA EDERLINE SERVICES (Formerly TMA) 4/22/03		Offsite Property No. A030229				Bill of Lading/Air Bill No. SEE OSPC						
POSSIBLE SAMPLE HAZARDS/REMARKS Special Handling and/or Storage				Preservation	Cool 4C	Cool 4C	Cool 4C	None	None			
				Type of Container	aG	aG	aG	aG	aG			
				No. of Container(s)	1	1	1	1	1			
				Volume	120mL	60mL	120mL	60mL	60mL			
SAMPLE ANALYSIS				Chromium Hex - 7196	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (1) in Special Instructions.	Tritium - H3				
Sample No.	Matrix *	Sample Date	Sample Time									
B16W89	SOIL	5/8/03	1025	X	X	X						
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *				
Relinquished By/Removed From TH Date/Time 5-8-03 1415		Received By/Stored In REL Date/Time 5-8-03 1415		4/22/03 ** The laboratory is to achieve a detection limit of 30.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis. (1) Technetium-99; Strontium-89,90 - Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-129; Nickel-63; Neptunium-237 4/22/03 Personnel not available to relinquish samples from the 3728 Ref # 1A on 5/13/03				S=Soil SE=Sediment SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue WI=Wipe L=Liquid V=Vegetation X=Other				
Relinquished By/Removed From R. Nielsen Date/Time 5/8/03 1415		Received By/Stored In Ref # 1A Date/Time 5/8/03 1415										
Relinquished By/Removed From REF 1A Date/Time 5/13/03 1300		Received By/Stored In 200A19 Del Date/Time 5/13/03 1300										
Relinquished By/Removed From 200A19 Del Date/Time 5/13/03 1300		Received By/Stored In FED EX Date/Time										
Relinquished By/Removed From 200A19 Date/Time 5/14/03 0935		Received By/Stored In 200A19 Date/Time 5/14/03 0935										
Relinquished By/Removed From		Received By/Stored In										
LABORATORY SECTION	Received By		Title		Date/Time							
FINAL SAMPLE DISPOSITION	Disposal Method		Disposed By		Date/Time							

LIONVILLE LABORATORY INCORPORATED

SAMPLE RECEIPT CHECKLIST

CLIENT: TNU Hartford

Purchase Order/Project:

DATE: 5.14.03

AF# / SOW# / Release #: F03-006

Laboratory SDG #:

03051403

NOTE: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION

- | | | | | |
|--|---|-----------------------------|---|--|
| 1. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 2. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 3. Airbill # recorded? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 4. All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 5. Sample containers are intact? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 7. All samples on coc received? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 8. All sample label information matches coc? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 10. Shipment meets LVL1 Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 11. Where applicable, bar code labels are affixed to coc? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 12. coc signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 13. coc will be faxed or emailed to client? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 14. Project Manager/Client contacted concerning discrepancies? (name/date) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |

Cooler # / temp (°C) and Comments:

ERC 02-404 / 1.2°

Laboratory Sample Custodian:

Laboratory Project Manager:

[Signature]

Lionville Laboratory, Inc.
GRO ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2208

DATE RECEIVED: 05/14/03

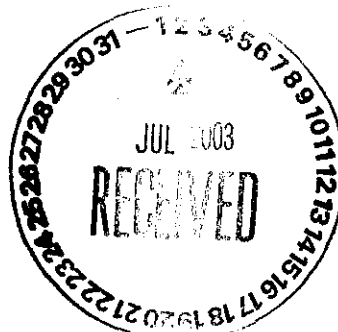
LVL LOT # :0305L403

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B16WB4	002	S	03LVK521	05/08/03	N/A	05/21/03
B16WB4	002 MS	S	03LVK521	05/08/03	N/A	05/21/03
B16WB4	002 MSD	S	03LVK521	05/08/03	N/A	05/21/03

LAB QC:

TBLKKD	MB1	S	03LVK521	N/A	N/A	05/21/03
TBLKKD	MB1 BS	S	03LVK521	N/A	N/A	05/22/03

ppc/2013





Analytical Report

Client: TNU HANFORD F03-006
LVL #: 0305L403
SDG/SAF#: H2208/F03-006

W.O. #: 11343-606-001-9999-00
Date Received: 05-14-03

GRO

One (1) soil sample was collected on 05-08-03.

The sample and its associated QC samples were analyzed according to Lionville Laboratory OPs based on SW-846 method 8015 for Gasoline range organics (GRO) on 05-21,22-03. The analysis met the intent of method WTPH-G.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. All results presented in this report are derived from samples that met LVL's sample acceptance policy.
2. All required holding times for analysis have been met.
3. The method blank was below the reporting limits for all target compounds.
4. All surrogate recoveries were within acceptance criteria.
5. The blank spike recovery was within acceptance criteria.
6. All matrix spike recoveries were within acceptance criteria.
7. All initial calibrations associated with this data set were within acceptance criteria.
8. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
9. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.


Ian Daniels

Laboratory Manager

Lionville Laboratory Incorporated


Date

pef\lrgroup\data\gro\tnu\05L-403.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 10 pages.



GLOSSARY OF GASOLINE RANGE ORGANICS DATA

DATA QUALIFIERS

- U** = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
- J** = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
- E** = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- I** = Interference.

ABBREVIATIONS

- BS** = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD** = Indicates blank spike duplicate.
- MS** = Indicates matrix spike.
- MSD** = Indicates matrix spike duplicate.
- DL** = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
- NA** = Not Applicable.
- DF** = Dilution Factor.
- NR** = Not Required.
- SP** = Indicates Spiked Compound.



GLOSSARY OF GASOLINE RANGE ORGANICS DATA

- D** = This flag identifies all compounds identified in an analysis at a secondary dilution factor.
- C** = This flag applies to a compound that has been confirmed by GC/MS.

R:/SHARE/GCVOLATILE/GCVOLATILEGLOS.DOC

GAS RANGE ORGANICS

RFW Batch Number: 0305L403

Client: TNUHANFORD F03-006 H2208 Work Order: 11343606001 Page: 1

Cust ID: B16WB4 B16WB4 B16WB4 TBLKKD TBLKKD BS

Sample	RFW#:	002	002 MS	002 MSD	03LVK521-MB1	03LVK521-MB1
Information	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG

	Fluorobenzene	88 %	83 %	80 %	97 %	101 %	
=====		fl	fl	fl	fl	fl	fl
Gasoline Range Organics (GRO)		29 U	98 %	93 %	30 U	103 %	

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

7/26/21/23

Q30SL403

A-C D E-G H I J

Lionville Laboratory Use Only

Samples were:	Tamper Resistant Seal was:
1) Shipped <input checked="" type="checkbox"/> or	1) Present on Outer
Hand Delivered <input type="checkbox"/>	Package <input checked="" type="checkbox"/> or N
Airbill # <u>7932 4751 3291</u>	2) Unbroken on Outer
	Package <input checked="" type="checkbox"/> or N
2) Ambient or <u>Chilled</u>	3) Present on Sample
	<input checked="" type="checkbox"/> or N
3) Received in Good	
Condition <input checked="" type="checkbox"/> or N	4) Unbroken on
	Sample <input checked="" type="checkbox"/> or N
4) Samples	COC Record Present
Properly Preserved	Upon Sample Rec't
<input checked="" type="checkbox"/> or N	<input checked="" type="checkbox"/> or N
5) Received Within	Cooler
Holding Times	Temp. <u>12</u> °C
<input checked="" type="checkbox"/> or N	

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-86		Page 1 of 1	
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N Data Turnaround 30 Days	
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-37 (C4106); (237.5'-240')		SAF No. F03-006		Air Quality <input type="checkbox"/>			
Ice Chest No. <u>ERC 02 404</u> <u>ELC 9A-0050/51303</u>		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Government Vehicle			
Shipped To <u>TMS/12/03</u> <u>Waste Sampling & Characterization</u> <u>Recrea</u>		Offsite Property No. <u>A030 229</u> <u>N/A</u>		Bill of Lading/Air Bill No. <u>SEE OSPC</u> <u>N/A</u>					
POSSIBLE SAMPLE HAZARDS/REMARKS Special Handling and/or Storage <u>20030601</u>				Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	
				Type of Container	Gs*	SG	Gs*	G/P	
				No. of Container(s)	3	1	3	✓	
				Volume	40mL	250mL	40mL	500mL	
SAMPLE ANALYSIS				See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.		
Sample No.	Matrix *	Sample Date	Sample Time						
B16WB3	SOIL	5-7-03	1050	X	X	X	X		
<u>W03000375</u>									
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS	
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		<p>** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.</p> <p>(1) VOA - 8260A (TCL); VOA - 8260A (Add-On) (2-Pentanone, Benzyl alcohol, n-Butylbenzene)</p> <p>(2) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (2-Butoxyethanol, Tributyl phosphate); TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G; PCBs - 8082</p> <p>(3) Alcohols, Glycols, & Ketones - 8015 (1-Butanol, Diethyl ether, Ethylene glycol, Methanol)</p> <p>(4) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Antimony-125, Cesium-134, Radium-226, Radium-228, Thorium-232); Isotopic Plutonium; Americium-241; Isotopic Uranium; Trace Elements-ICP/MS - 200.8 (Complete) (Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, Uranium); PCP Metals - 6010A (Add-on) (Bismuth, Boron); TC Anions - 300.0 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate); Cyanide (Total) - 335.2; Cations (IC) - 300.7 (Nitrogen in ammonium); pH (Soil) - 8045.</p> <p>Personnel not available to relinquish samples from the 3728 Ref # <u>LA</u> on <u>5/13/03</u></p>	
<u>John Johansen</u>		<u>5/7/03 1405</u>		<u>John Johansen</u>		<u>5/7/03 1405</u>			
<u>John Johansen</u>		<u>5/8/03 1300</u>		<u>John Johansen</u>		<u>5/8/03 1300</u>			
<u>John Johansen</u>		<u>5/8/03 1415</u>		<u>John Johansen</u>		<u>5/8/03 1415</u>			
<u>John Johansen</u>		<u>5/8/03 1415</u>		<u>John Johansen</u>		<u>5/8/03 1415</u>			
<u>John Johansen</u>		<u>5/8/03 1415</u>		<u>John Johansen</u>		<u>5/8/03 1415</u>			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		<p>Matrix *</p> <p>S=Soil SE=Sediment SO=Solid SH=Sludge W=Water O=Oil A=Air DS=Dry Solids P=Particulates F=Flammable W=Waste L=Liquid V=Volatiles X=Other</p>	
<u>John Johansen</u>		<u>5/13/03 1300</u>		<u>John Johansen</u>		<u>5/13/03 1300</u>			
<u>John Johansen</u>		<u>5/13/03 1300</u>		<u>John Johansen</u>		<u>5/13/03 1300</u>			
<u>John Johansen</u>		<u>5/13/03 1300</u>		<u>John Johansen</u>		<u>5/13/03 1300</u>			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time			
<u>John Johansen</u>		<u>5/13/03 1300</u>		<u>John Johansen</u>		<u>5/13/03 1300</u>			
<u>John Johansen</u>		<u>5/13/03 1300</u>		<u>John Johansen</u>		<u>5/13/03 1300</u>			
<u>John Johansen</u>		<u>5/13/03 1300</u>		<u>John Johansen</u>		<u>5/13/03 1300</u>			
LABORATORY SECTION		Received By <u>John Johansen</u> <u>5/13/03 1300</u>		Title <u>John Johansen</u> <u>5/13/03 1300</u>		Date/Time			
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By		Date/Time			

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-87		Page 1 of 1	
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N Data Turnaround 30 Days	
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-37 (C4106); (272.5'-275')		SAF No. F03-006		Air Quality <input type="checkbox"/>			
Ice Chest No. ERC 02 404 ERC 99-005		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Government Vehicle			
Shipped To ms 5-12-03 Waste Sampling & Characterization <i>Becca</i>		Offsite Property No. 17A 4945723 <i>A030 229</i>		Bill of Lading/Air Bill No. <i>SEB-OSPC</i>					
POSSIBLE SAMPLE HAZARDS/REMARKS Special Handling and/or Storage				Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	
				Type of Container	Gs*	2G	Gs*	G/R	
				No. of Container(s)	13	1	13	13	
				Volume	40mL	40mL-280mL	40mL	120mL	
SAMPLE ANALYSIS				See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.		
Sample No.	Matrix *	Sample Date	Sample Time						
B16WB4	SOIL	5/8/03	1025	X	X	X	X		
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		<p>** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.</p> <p>(1) VOA - 8260A (TCL); VOA - 8260A (Add-On) {2-Pentanone, Benzyl alcohol, n-Butylbenzene}</p> <p>(2) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) {2-Butoxyethanol, Tributyl phosphate}; TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G; PCBs - 8082</p> <p>(3) Alcohols, Glycols, & Ketones - 8015 {Diethyl ether, Ethylene glycol, Methanol}</p> <p>(4) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma-Spec - Add-on {Antimony-125, Cesium-134, Radium-226, Radium-228, Tin-126}; Isotopic</p> <p>Plutonium, Americium-241, Isotopic Uranium, Trace Elements ICP/MS - 200.8 (Complete) {Antimony, Arsenic, Barium, Beryllium, Chromium, Copper, Lead, Mercury, Nickel, Silver, Uranium}; ICP Metals - 6010A (Add-on) {Bismuth, Boron}; IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate}; Cyanide (Total) - 335.2; Cations (IC) - 300.7 {Nitrogen in ammonium}; pH (Soil) - 9045</p> <p>Personnel not available to relinquish samples from the 3728 Ref # 1A on 5/12/03</p>	
<i>J.S. Pope</i>		5/8/03 1120		<i>Becca</i>		5/8/03 1120			
<i>Becca</i>		5/8/03 1300		<i>Becca</i>		5/8/03 1300			
<i>Becca</i>		5/8/03 1415		<i>R. Nickson</i>		5/8/03 1415			
<i>R. Nickson</i>		5/8/03 1415		<i>Ref # 1A 3728</i>		5/8/03 1415			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time			
<i>Ref # 1A 3728</i>		5/8/03 1300		<i>S. J. Hulstrom</i>		5/8/03 1300			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time			
<i>S. J. Hulstrom</i>		5/8/03 1300		<i>FED EX</i>		5/8/03 1300			
LABORATORY SECTION		Received By		Date/Time		Disposed By		Date/Time	
		<i>Becca</i>		5/8/03 0935		<i>S. J. Hulstrom</i>		5/8/03 1335	
FINAL SAMPLE DISPOSITION		Disposal Method		Date/Time		Disposed By		Date/Time	

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					F03-006-72		Page 1 of 1		
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N		Data Turnaround 45 Days	
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-37 (C4106); (272.5'-275')		SAF No. F03-006		Air Quality <input type="checkbox"/>					
Ice Chest No. ERC 02 404		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express					
Shipped To RELRA EDERLINE SERVICES (Formerly TMA) 4/22/03		Offsite Property No. A030229				Bill of Lading/Air Bill No. SEE OSPC					
POSSIBLE SAMPLE HAZARDS/REMARKS Special Handling and/or Storage		Preservation	Cool 4C	Cool 4C	Cool 4C	None	None				
		Type of Container	aG	aG	aG	aG	aG				
		No. of Container(s)	1	1	1	1	1				
		Volume	120mL	60mL	120mL	60mL	60mL				
SAMPLE ANALYSIS		Chromium Hex - 7196	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (1) in Special Instructions.	Trigum - H3					
Sample No.	Matrix *	Sample Date	Sample Time								
B16W89	SOIL	5/8/03	1025	X	X	X					
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS 4/22/03				Matrix * S=Soil SE=Sediment SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Dry Solid DL=Dry Liquid T=Tissue WI=Wipe L=Liquid V=Vegetation X=Other			
Relinquished By/Removed From RELRA Date/Time 5/8/03 1415				Received By/Stored In RELRA Date/Time 5/8/03 1415							
Relinquished By/Removed From RELRA Date/Time 5/8/03 1415				Received By/Stored In RELRA Date/Time 5/8/03 1415							
Relinquished By/Removed From RELRA Date/Time 5/13/03 1300				Received By/Stored In RELRA Date/Time 5/13/03 1300							
Relinquished By/Removed From RELRA Date/Time 5/13/03 1300				Received By/Stored In RELRA Date/Time 5/13/03 1300							
Relinquished By/Removed From RELRA Date/Time 5/14/03 0935				Received By/Stored In RELRA Date/Time 5/14/03 0935							
Relinquished By/Removed From RELRA Date/Time 5/14/03 0935				Received By/Stored In RELRA Date/Time 5/14/03 0935							
LABORATORY SECTION		Received By		Title		Date/Time					
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By		Date/Time					

LIONVILLE LABORATORY INCORPORATED

SAMPLE RECEIPT CHECKLIST

CLIENT: TNU Handford

Purchase Order/Project:

DATE: 5-14-03

AF# / SOW# / Release #: F03-006

Laboratory SDG #:

03051403

NOTE: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION

- | | | | | |
|--|---|-----------------------------|---|--|
| 1. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 2. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 3. Airbill # recorded? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 4. All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 5. Sample containers are intact? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 7. All samples on coc received? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 8. All sample label information matches coc? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 10. Shipment meets Lvl1 Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 11. Where applicable, bar code labels are affixed to coc? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 12. coc signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 13. coc will be faxed or emailed to client? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 14. Project Manager/Client contacted concerning discrepancies? (name/date) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |

Cooler # / temp (°C) and Comments:

ERC 02-404 / 1.2°

Laboratory Sample Custodian:

Laboratory Project Manager:

[Signature]

Lionville Laboratory, Inc.
PCB ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2208

DATE RECEIVED: 05/14/03

LVL LOT # :0305L403

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B16WB4	002	S	03LE0582	05/08/03	05/15/03	05/20/03

LAB QC:

PBLKUB	MB1	S	03LE0582	N/A	05/15/03	05/20/03
PBLKUB	MB1 BS	S	03LE0582	N/A	05/15/03	05/20/03

Handwritten signature/initials





Analytical Report

Client: TNU-HANFORD F03-006

LVL #: 0305L403

SDG/SAF #: H2208/F03-006

W.O. #: 11343-606-001-9999-00

Date Received: 05-14-03

PCB

One (1) soil sample was collected on 05-08-03.

The sample and its associated QC samples were extracted on 05-15-03 and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 05-20-03. The extraction procedure was based on method 3540 and the extracts were analyzed based on method 8082.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
2. All required holding times for extraction and analysis have been met.
3. The sample and its associated QC samples received Sulfuric Acid and Sulfur cleanups.
4. The method blank was below the reporting limits for all target compounds.
5. All surrogate recoveries were within acceptance criteria.
6. The blank spike recovery was within acceptance criteria.
7. Due to insufficient sample volume, matrix spike QC could not be performed on any samples in this data set. However, blank spike QC were performed with these samples to demonstrate that systems were in control.
8. All initial calibrations associated with this data set were within acceptance criteria.
9. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.


Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated


Date

pefr:\group\data\pest\tnu hanford\05L-403.pcb

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 10 pages.



GLOSSARY OF PESTICIDE/PCB DATA

DATA QUALIFIERS

- U = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
- J = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
- E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- I = Interference.

ABBREVIATIONS

- BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD = Indicates blank spike duplicate.
- MS = Indicates matrix spike.
- MSD = Indicates matrix spike duplicate.
- DL = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
- NA = Not Applicable.
- DF = Dilution Factor.
- NR = Not Required.
- SP = Indicates Spiked Compound.



GLOSSARY OF PESTICIDE/PCB DATA

- P** = This flag is used for an PESTICIDE/PCB target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".
- D** = This flag identifies all compounds identified in an analysis at a secondary dilution factor.
- C** = This flag applies to a compound that has been confirmed by GC/MS.

PCBs by GC

5

Client: **TNUHANFORD F03-006 H2208** Work Order: 11343606001 Page: 1

Sample	RFW#:	002	03LE0582-MB1	03LE0582-MB1
Information	Matrix:	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG

9/10/13

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-86		Page 1 of 1	
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N Data Turnaround 30 Days	
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-37 (C4106); (237.5'-240')		SAF No. F03-006		Air Quality <input type="checkbox"/>			
Ice Chest No. <u>ERC 02 404</u> <u>686 49-005 4/5 51303</u>		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Government Vehicle			
Shipped To <u>MD5/12/03</u> <u>Waste Sampling & Characterization</u> <u>Reera</u>		Offsite Property No. <u>A030229</u>		Bill of Lading/Air Bill No. <u>SEE OSPC</u>					
POSSIBLE SAMPLE HAZARDS/REMARKS Special Handling and/or Storage <u>20030601</u>				Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	
				Type of Container	Gs*	nG	Gs*	G/B	
				No. of Container(s)	3	1	3	✓	
				Volume	40mL	250mL	40mL	500mL	
SAMPLE ANALYSIS				See item (1) in Special Instructions	See item (2) in Special Instructions	See item (3) in Special Instructions	See item (4) in Special Instructions		
Sample No.	Matrix *	Sample Date	Sample Time						
B16WB3	SOIL	5-7-03	1050	X	X	X	X		
<u>W03000375</u>									
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By/Removed From <u>THOMSON</u>		Date/Time <u>5/7/03 1405</u>		Received By/Stored In <u>RECEIVED</u>		Date/Time <u>5/7/03 1405</u>		<p>** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.</p> <p>(1) VOA - 8260A (TCL); VOA - 8260A (Add-On) (2-Pentanone, Benzyl alcohol, n-Butylbenzene)</p> <p>(2) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (2-Butoxyethanol, Tributyl phosphate); TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G; PCBs - 8082</p> <p>(3) Alcohols, Glycols, & Ketones - 8015 (1-Butanol, Diethyl ether, Ethylene glycol, Methanol)</p> <p>(4) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Antimony-125, Cesium-134, Radium-226, Radium-228, Thorium-232); Isotopic Plutonium, Americium-241; Isotopic Uranium; Trace Elements (ICP-AES - 200.8 (Complete) (Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, Uranium); ICP Metals - 8010A (Add-on) (Bismuth, Boron); IC Anions - 200.0 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate); Cyanide (Total) - 333.2; Cations (IC) - 300.7 (Nitrogen in ammonium); pH (Soil) - 9045.</p> <p>Personnel not available to relinquish samples from the 3728 Ref # <u>1A</u> on <u>5/13/03</u></p>	
Relinquished By/Removed From <u>RECEIVED</u>		Date/Time <u>5/8/03 1300</u>		Received By/Stored In <u>THOMSON</u>		Date/Time <u>5/8/03 1300</u>			
Relinquished By/Removed From <u>THOMSON</u>		Date/Time <u>5/8/03 1415</u>		Received By/Stored In <u>RECEIVED</u>		Date/Time <u>5/8/03 1415</u>			
Relinquished By/Removed From <u>RECEIVED</u>		Date/Time <u>5/8/03 1415</u>		Received By/Stored In <u>REF # 1A 3728</u>		Date/Time <u>5/8/03 1415</u>			
Relinquished By/Removed From <u>REF 1A 3728</u>		Date/Time <u>5/13/03 1300</u>		Received By/Stored In <u>RECEIVED</u>		Date/Time <u>5/13/03 1300</u>			
Relinquished By/Removed From <u>SJ GALE</u>		Date/Time <u>5/13/03 1300</u>		Received By/Stored In <u>FED EX</u>		Date/Time <u>5/13/03 1300</u>			
LABORATORY SECTION		Received By <u>MEOW</u> <u>5/14/03 0935</u> <u>2/2/03 0935</u> Title				Date/Time			
FINAL SAMPLE DISPOSITION		Disposal Method				Disposed By			
						Date/Time			

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-87		Page 1 of 1	
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N Data Turnaround 30 Days	
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-37 (C4106); (272.5'-275')		SAF No. F03-006		Air Quality <input type="checkbox"/>			
Ice Chest No. ERC 02 404 ERC 99-005		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Government Vehicle			
Shipped To MOS 5-12-03 Waste Sampling & Characterization Becca		Offsite Property No. A030 229		Bill of Lading/Air Bill No. SEA-OSPC					
POSSIBLE SAMPLE HAZARDS/REMARKS Special Handling and/or Storage				Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	
				Type of Container	Gs*	gG	Gs*	G/R	
				No. of Container(s)	13	1	13	13	
				Volume	40mL	40mL	40mL	40mL	
SAMPLE ANALYSIS				See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.		
Sample No.	Matrix *	Sample Date	Sample Time						
B16WB4	SOIL	5/8/03	1025	X	X	X	X		
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time			
J-S. Pope		5/8/03 1120		J-S. Pope		5/8/03 1120			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time			
J-S. Pope		5/8/03 1300		J-S. Pope		5/8/03 1300			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time			
J-S. Pope		5/8/03 1415		J-S. Pope		5/8/03 1415			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time			
J-S. Pope		5/8/03 1415		J-S. Pope		5/8/03 1415			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time			
J-S. Pope		5/8/03 1300		J-S. Pope		5/8/03 1300			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time			
J-S. Pope		5/8/03 1300		J-S. Pope		5/8/03 1300			
LABORATORY SECTION				SPECIAL INSTRUCTIONS				Matrix *	
Received By		Date/Time		Received By/Stored In		Date/Time			
J-S. Pope		5/8/03 1300		J-S. Pope		5/8/03 1300			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time			
J-S. Pope		5/8/03 1300		J-S. Pope		5/8/03 1300			
FINAL SAMPLE DISPOSITION				SPECIAL INSTRUCTIONS				Matrix *	
Disposal Method		Date/Time		Disposal By		Date/Time			
J-S. Pope		5/8/03 1300		J-S. Pope		5/8/03 1300			

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					F03-006-72		Page 1 of 1		
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N		Data Turnaround 45 Days	
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-37 (C4106); (272.5'-275')		SAF No. F03-006		Air Quality <input type="checkbox"/>					
Ice Chest No. ERC 02 404		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express					
Shipped To RECRA EDERLINE SERVICES (Formerly TMA)		Offsite Property No. A030229		Bill of Lading/Air Bill No. SEE OSC							
POSSIBLE SAMPLE HAZARDS/REMARKS Special Handling and/or Storage		Preservation	Cool 4C	Cool 4C	Cool 4C	None	None				
		Type of Container	aG	aG	aG	aG	aG				
		No. of Container(s)	1	1	1	1	1				
		Volume	120mL	60mL	120mL	60mL	60mL				
SAMPLE ANALYSIS		Chromium Hex - 7196	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (1) in Special Instructions.	Trinium - H3					
Sample No.	Matrix *	Sample Date	Sample Time								
B16W89	SOIL	5/8/03	1025	X	X	X					
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *			
Relinquished By/Removed From RECRA		Date/Time 5/8/03 1415		Received By/Stored In RECRA		Date/Time 5/8/03 1415		<p>** The laboratory is to achieve a detection limit of 30.0 pCug for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.</p> <p>(1) Technetium-99; Strontium-89,90 - Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-129; Nickel-63; Neptunium-237</p> <p>Personnel not available to relinquish samples from the 3728 Ref # 1A on 5/13/03</p>			
Relinquished By/Removed From R. Nielsen		Date/Time 5/8/03 1415		Received By/Stored In Ref # 1A		Date/Time 5/8/03 1415					
Relinquished By/Removed From REF 1A		Date/Time 5/13/03 1300		Received By/Stored In 216A-37		Date/Time 5/13/03 1300					
Relinquished By/Removed From 216A-37		Date/Time 5/13/03 1300		Received By/Stored In FED EX		Date/Time					
Relinquished By/Removed From RECRA		Date/Time 5/14/03 0935		Received By/Stored In RECRA		Date/Time 5/14/03 0935					
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time					
LABORATORY SECTION		Received By		Title		Date/Time					
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By		Date/Time					

LIONVILLE LABORATORY INCORPORATED

SAMPLE RECEIPT CHECKLIST

CLIENT: TNU Handford

Purchase Order/Project:

DATE: 5-14-03

AF# / SOW# / Release #: F03-006

Laboratory SDG #:

03051403

NOTE: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION

- | | | | | |
|--|---|-----------------------------|---|--|
| 1. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 2. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 3. Airbill # recorded? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 4. All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 5. Sample containers are intact? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 7. All samples on coc received? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 8. All sample label information matches coc? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 10. Shipment meets LVL1 Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 11. Where applicable, bar code labels are affixed to coc? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 12. coc signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 13. coc will be faxed or emailed to client? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 14. Project Manager/Client contacted concerning discrepancies? (name/date) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |

Cooler # / temp (°C) and Comments:

ERC 02-404 / 1.2°

Laboratory Sample Custodian:

[Signature]

Laboratory Project Manager:

Lionville Laboratory, Inc.
GCSC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2208

DATE RECEIVED: 05/14/03

LVL LOT # :0305L403

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B16WB4	002	S	03LE0610	05/08/03	05/21/03	05/23/03
B16WB4	002 MS	S	03LE0610	05/08/03	05/21/03	05/23/03
B16WB4	002 MSD	S	03LE0610	05/08/03	05/21/03	05/23/03

LAB QC:

BLK	MB1	S	03LE0610	N/A	05/21/03	05/22/03
BLK	MB1 BS	S	03LE0610	N/A	05/21/03	05/22/03

Handwritten signature/initials





Analytical Report

Client: TNU HANFORD F03-006
LVL#: 0305L403
SDG/SAF#: H2208/F03-006

W.O.#: 11343-606-001-9999-00
Date Received: 05-14-03

GC SCAN

One (1) soil sample was collected on 05-08-03.

The sample and its associated QC samples were prepped on 05-21-03 and analyzed on 05-22,23-03 according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures based on method 8015B for Methanol, Ethyl Ether, and 1-Butanol.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
2. All required holding times for analysis have been met.
3. The method blank was below the reporting limits for all target compounds.
4. Surrogates are not currently employed in the methodology.
5. All blank spike recoveries were within acceptance criteria.
6. All matrix spike recoveries were within acceptance criteria.
7. All initial calibrations were within acceptance criteria.
8. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
9. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.


Iain Daniels

Laboratory Manager

Lionville Laboratory Incorporated

r:\group\data\gcsc\05L-403b.doc


Date

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 10 pages.



GLOSSARY OF GC SCAN DATA

DATA QUALIFIERS

- U** = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
- J** = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
- E** = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- I** = Interference.

ABBREVIATIONS

- BS** = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD** = Indicates blank spike duplicate.
- MS** = Indicates matrix spike.
- MSD** = Indicates matrix spike duplicate.
- DL** = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
- NA** = Not Applicable.
- DF** = Dilution Factor.
- NR** = Not Required.
- SP** = Indicates Spiked Compound.



GLOSSARY OF GC SCAN DATA

- P** = This flag is used for an GC SCAN target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".
- D** = This flag identifies all compounds identified in an analysis at a secondary dilution factor.
- C** = This flag applies to a compound that has been confirmed by GC SCAN.

Lionville Laboratory, Inc.

GC SCAN

Report Date: 06/21/03 09:32

RFW Batch Number: 0305L403

Client: TNUHANFORD F03-006 H2208 Work Order: 11343606001 Page: 1

	Cust ID:	B16WB4	B16WB4	B16WB4	BLK	BLK BS
Sample	RFW#:	002	002 MS	002 MSD	03LE0610-MB1	03LE0610-MB1
Information	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
=====fl=====fl=====fl=====fl=====fl=====fl=====fl=====						
Methanol		24 U	80 %	81 %	25 U	80 %
Ethyl Ether		24 U	60 %	54 %	25 U	50 %
1-Butanol		24 U	94 %	99 %	25 U	94 %

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
 %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

pgs/m/s

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS[illegible]

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-86		Page 1 of 1	
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N Data Turnaround 30 Days	
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-37 (C4106); (237.5'-240')		SAF No. F03-006		Air Quality <input type="checkbox"/>			
Ice Chest No. <u>ERC 02 404</u> <u>EEC 99 0050/AS1303</u>		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Government Vehicle			
Shipped To <u>TPDS/12/03</u> <u>Waste Sampling & Characterization</u> <u>Recca</u>		Offsite Property No. <u>N/A</u> <u>A030 229</u>		Bill of Lading/Air Bill No. <u>N/A</u> <u>SEE OSPC</u>					
POSSIBLE SAMPLE HAZARDS/REMARKS Special Handling and/or Storage <u>20030601</u>				Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	
				Type of Container	Gs*	aG	Gs*	G/P	
				No. of Container(s)	3	1	3	4	
				Volume	40mL	250mL	40mL	500mL	
SAMPLE ANALYSIS				See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.		
Sample No.	Matrix *	Sample Date	Sample Time						
B16WB3	SOIL	5-7-03	1050	X	X	X	X		
<u>W03000375</u>									
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *	
<div style="display: flex; justify-content: space-between;"> <div> Relinquished By/Removed From <u>TPDS/12/03</u> Date/Time <u>5/7/03 1405</u> </div> <div> Received By/Stored In <u>TPDS/12/03</u> Date/Time <u>5/7/03 1405</u> </div> </div>				** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis. (1) VOA - 8260A (TCL); VOA - 8260A (Add-On) (2-Pentanone, Benzyl alcohol, n-Butylbenzene) (2) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (2-Butoxyethanol, Tributyl phosphate); TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G; PCBs - 8082 (3) Alcohols, Glycols, & Ketones - 8015 (1-Butanol, Diethyl ether, Ethylene glycol, Methanol) (4) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Antimony-125, Cesium-134, Radium-226, Radium-228, Th-232); Isotopic Plutonium, Americium-241, Isotopic Uranium; Trace Elements (ICRAMS - 200.8 (Complete) (Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, Uranium); ICP Metals - 8010A (Add-on) (Bismuth, Boron); IC Anions - 300.0 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate); Cyanide (1001) - 333.2; Cations (IC) - 300.7 (Nitrogen in ammonium); pH (Soil) - 9045. Personnel not available to relinquish samples from the 3728 Ref # <u>1A</u> on <u>5/13/03</u>				S=Soil SE=Sediment SO=Solid SP=Sludge W=Water O=Oil A=Air DS=Drum Solids DQ=Drum Liquids PVT=Vial AQ=Wipe LQ=Liquid V=Vegetation X=Other	
<div style="display: flex; justify-content: space-between;"> <div> Relinquished By/Removed From <u>TPDS/12/03</u> Date/Time <u>5/8/03 1300</u> </div> <div> Received By/Stored In <u>TPDS/12/03</u> Date/Time <u>5/8/03 1300</u> </div> </div>									
<div style="display: flex; justify-content: space-between;"> <div> Relinquished By/Removed From <u>TPDS/12/03</u> Date/Time <u>5/8/03 1415</u> </div> <div> Received By/Stored In <u>R. Nielson</u> Date/Time <u>5/8/03 1415</u> </div> </div>									
<div style="display: flex; justify-content: space-between;"> <div> Relinquished By/Removed From <u>R. Nielson</u> Date/Time <u>5/8/03 1415</u> </div> <div> Received By/Stored In <u>Ref # 1A 3728</u> Date/Time <u>5/8/03 1415</u> </div> </div>									
<div style="display: flex; justify-content: space-between;"> <div> Relinquished By/Removed From <u>REF 1A 3728</u> Date/Time <u>5/30/03 1300</u> </div> <div> Received By/Stored In <u>SGA/12/03</u> Date/Time <u>5/30/03 1300</u> </div> </div>									
<div style="display: flex; justify-content: space-between;"> <div> Relinquished By/Removed From <u>SGA/12/03</u> Date/Time <u>5/30/03 1300</u> </div> <div> Received By/Stored In <u>FED EX</u> Date/Time <u></u> </div> </div>									
LABORATORY SECTION		Received By <u>TPDS/12/03</u> <u>5/14/03 1035</u> <u>TPDS/12/03</u> <u>5/14/03 0935</u> Title		Disposed By		Date/Time			
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By		Date/Time			

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-87		Page 1 of 1	
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N Data Turnaround 30 Days	
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-37 (C4106); (272.5'-275')		SAF No. F03-006		Air Quality <input type="checkbox"/>			
Ice Chest No. ERC 02 404 ERC 99 005		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Government Vehicle			
Shipped To MDS 5-12-03 Waste Sampling & Characterization Heera		Offsite Property No. A030 229		Bill of Lading/Air Bill No. SEA 05733		SEA 05733			
POSSIBLE SAMPLE HAZARDS/REMARKS Special Handling and/or Storage				Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	
				Type of Container	Gs*	gG	Gs*	G/P	
				No. of Container(s)	73	1	73	73	
				Volume	40mL	40mL 280mL	40mL	40mL	
SAMPLE ANALYSIS				See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.		
Sample No.	Matrix *	Sample Date	Sample Time						
B16WB4	SOIL	5/8/03	1025	X	X	X	X		
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By/Removed From J.S. Pope 5/8/03 1120		Received By/Stored In K. Nickerson 5/8/03 1120		<p>** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.</p> <p>(1) VOA - 8260A (TCL); VOA - 8260A (Add-On) {2-Pentanone, Benzyl alcohol, n-Butylbenzene}</p> <p>(2) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) {2-Butoxyethanol, Tributyl phosphate};</p> <p>TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G; PCBs - 8082</p> <p>(3) Alcohols, Glycols, & Ketones - 8015 (Diethyl ether, Ethylene glycol, Methanol)</p> <p>(4) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155);</p> <p>Gamma Spec - Add-on (Antimony-125, Cesium-134, Radium-226, Radium-228, Tin-126); Isotopic</p> <p>Plutonium, Americium-241, Isotopic Uranium, Trace Elements ICP/MS - 200.6 (Complete) (Antimony, Arsenic, Barium, Beryllium, Chromium, Copper, Lead, Mercury, Nickel, Silver, Uranium); ICP Metals - 6010A (Add-on) (Bismuth, Boron); IC-Anions - 300.6 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate); Cyanide (Total) - 335.2; Cations (IC) - 300.7 (Nitrogen in ammonium); pH (Soil) = 9045</p> <p>Personnel not available to relinquish samples from the 3728 Ref # 1A on 5/12/03</p>				<p>S-Soil</p> <p>SE-Sediment</p> <p>SO-Solid</p> <p>Sl-Sludge</p> <p>W-Water</p> <p>O-Oil</p> <p>AS-Air</p> <p>DS-Diesel Solids</p> <p>DL-Drum Liquids</p> <p>VS-Vegetation</p> <p>X-Other</p>	
Relinquished By/Removed From J.S. Pope 5/8/03 1300		Received By/Stored In K. Nickerson 5/8/03 1300							
Relinquished By/Removed From J.S. Pope 5/8/03 1445		Received By/Stored In K. Nickerson 5/8/03 1445							
Relinquished By/Removed From J.S. Pope 5/8/03 1300		Received By/Stored In K. Nickerson 5/8/03 1300							
Relinquished By/Removed From J.S. Pope 5/8/03 1300		Received By/Stored In K. Nickerson 5/8/03 1300							
LABORATORY SECTION		Received By K. Nickerson 5/14/03 0735		Disposed By				Date/Time	
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By				Date/Time	

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					F03-006-72		Page 1 of 1		
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N		Data Turnaround 45 Days	
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-37 (C4106); (272.5'-275')		SAF No. F03-006		Air Quality <input type="checkbox"/>					
Ice Chest No. ERC 02 404		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express					
Shipped To RECRA EDERLINE SERVICES (Formerly TMA) 4/22/03		Offsite Property No. A030229		Bill of Lading/Air Bill No. SEE OSPC							
POSSIBLE SAMPLE HAZARDS/REMARKS Special Handling and/or Storage				Preservation	Cool 4C	Cool 4C	Cool 4C	None	None		
				Type of Container	aG	aG	aG	aG	aG		
				No. of Container(s)	1	1	1	1	1		
				Volume	120mL	60mL	120mL	60mL	60mL		
SAMPLE ANALYSIS				Chromium Hex - 7196	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (1) in Special Instructions	Tritium - H3			
Sample No.	Matrix *	Sample Date	Sample Time								
B16W89	SOIL	5/8/03	1025	X	X	X					
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *			
Relinquished By/Removed From RECRA Date/Time 5/8/03 1415		Received By/Spored In RECRA Date/Time 5/8/03 1415		4/22/03 ** The laboratory is to achieve a detection limit of 30.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis. (1) Technetium-99; Strontium-89,90 - Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-129; Nickel-63; Neptunium-237 4/22/03 Personnel not available to relinquish samples from the 3728 Ref # 1A on 5/13/03				S=Soil SE=Soil/Sediment SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue WI=Wipe L=Liquid V=Vegetation X=Other			
Relinquished By/Removed From R. Nielsen Date/Time 5/8/03 1415		Received By/Spored In R. Nielsen Date/Time 5/8/03 1415									
Relinquished By/Removed From REF 1A 3728 Date/Time 5/13/03 1300		Received By/Spored In 20ALC 29 Del Date/Time 5/13/03 1300									
Relinquished By/Removed From 20ALC 29 Del Date/Time 5/13/03 1300		Received By/Spored In FED EX Date/Time 5/13/03 1300									
Relinquished By/Removed From RECRA Date/Time 5/14/03 0935		Received By/Spored In RECRA Date/Time 5/14/03 0935									
Relinquished By/Removed From RECRA Date/Time 5/14/03 0935		Received By/Spored In RECRA Date/Time 5/14/03 0935									
LABORATORY SECTION		Received By		Title		Date/Time					
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By		Date/Time					

LIONVILLE LABORATORY INCORPORATED

SAMPLE RECEIPT CHECKLIST

CLIENT: TNU *Handford*

Purchase Order/Project:

DATE: 5-14-03

AF# / SOW# / Release #: F03-006

Laboratory SDG #:

03051403

NOTE: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION

- | | | | | |
|--|---|-----------------------------|---|--|
| 1. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 2. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 3. Airbill # recorded? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 4. All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 5. Sample containers are intact? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 7. All samples on coc received? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 8. All sample label information matches coc? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 10. Shipment meets LVLJ Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 11. Where applicable, bar code labels are affixed to coc? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 12. coc signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 13. coc will be faxed or emailed to client? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 14. Project Manager/Client contacted concerning discrepancies? (name/date) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |

Cooler # / temp (°C) and Comments:

ERC 02-404 / 1.2°

Laboratory Sample Custodian:

[Signature]

Laboratory Project Manager:

Lionville Laboratory, Inc.
8015 ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2208

DATE RECEIVED: 05/14/03

LVL LOT # :0305L403

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B16WB4	002	S	03LE0604	05/08/03	05/20/03	05/20/03
B16WB4	002 MS	S	03LE0604	05/08/03	05/20/03	05/20/03
B16WB4	002 MSD	S	03LE0604	05/08/03	05/20/03	05/20/03

LAB QC:

BLK	MB1	S	03LE0604	N/A	05/20/03	05/20/03
BLK	MB1 BS	S	03LE0604	N/A	05/20/03	05/20/03

9/24/03





Analytical Report

Client: TNU HANFORD F03-006
LVL#: 0305L403
SDG/SAF#: H2208/F03-006

W.O.#: 11343-606-001-9999-00
Date Received: 05-14-03

GC SCAN-Ethylene Glycol

One (1) soil sample was collected on 05-08-03.

The sample and its associated QC samples were prepped and analyzed on 05-20-03 according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures based on method 8015B for Ethylene Glycol.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
2. All required holding times for analysis have been met.
3. The method blank was below the reporting limits for all target compounds.
4. Surrogates are not currently employed in the methodology.
5. The blank spike recovery was within acceptance criteria.
6. All matrix spike recoveries were within acceptance criteria.
7. All initial calibrations were within acceptance criteria.
8. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
9. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.


Iain Daniels

Laboratory Manager

Lionville Laboratory Incorporated

r:\group\data\gcsc\05L-403.doc


Date

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 10 pages.



GLOSSARY OF GC SCAN DATA

DATA QUALIFIERS

- U** = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
- J** = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
- E** = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- I** = Interference.

ABBREVIATIONS

- BS** = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD** = Indicates blank spike duplicate.
- MS** = Indicates matrix spike.
- MSD** = Indicates matrix spike duplicate.
- DL** = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
- NA** = Not Applicable.
- DF** = Dilution Factor.
- NR** = Not Required.
- SP** = Indicates Spiked Compound.



GLOSSARY OF GC SCAN DATA

- P** = This flag is used for an GC SCAN target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".
- D** = This flag identifies all compounds identified in an analysis at a secondary dilution factor.
- C** = This flag applies to a compound that has been confirmed by GC SCAN.

Lionville Laboratory, Inc.

Nonhalogenated Volatiles by GC, Method 8015

Report Date: 06/21/03 08:41

RFW Batch Number: 0305L403

Client: TNUHANFORD F03-006 H2208 Work Order: 11343606001 Page: 1

	Cust ID:	B16WB4	B16WB4	B16WB4	BLK	BLK BS
Sample	RFW#:	002	002 MS	002 MSD	03LE0604-MB1	03LE0604-MB1
Information	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg

	fl	fl	fl	fl	fl	fl
Ethylene Glycol	21.0 U	102 %	101 %	25.0 U	98 %	

gfh

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
 %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC


VLI
 LIONVILLE LABORATORY INC.

030SL403

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client <u>TNU-Hamford</u> <u>F03-006</u>				Refrigerator #		A-C		D		E-G		H		I		J	
Est. Final Proj. Sampling Date				#Type Container		Liquid		Solid		Liquid		Solid		Liquid		Solid	
Project # <u>11343-606-001-9999-00</u>				Volume		Liquid		Solid		Liquid		Solid		Liquid		Solid	
Project Contact/Phone #				Preservatives		-		-		-		-		-		-	
Lionville Laboratory Project Manager <u>Delette Johnson</u>				ANALYSES REQUESTED		ORGANIC		INORG		Metal		CN		Her		Chrom	
QC <u>SPE</u> Del <u>STD</u> TAT <u>30 days</u>				Date Rec'd <u>5-14-03</u> Date Due <u>6-13-03</u>		VOA		BNA		Pest/PCB		Herb		Alcohol		Starch	
MATRIX CODES:				Lab ID		Client ID/Description		Matrix QC Chosen (✓)		Matrix		Date Collected		Time Collected		Lionville Laboratory Use Only	
S - Soil								MS		MSD							
SE - Sediment																	
SO - Solid																	
SL - Sludge																	
W - Water																	
O - Oil																	
A - Air																	
DS - Drum Solids																	
DL - Drum Liquids																	
L - EP/TCLP Leachate																	
WI - Wipes																	
X - Other																	
F - Fish																	

Special Instructions: SAF # F03-006Run Matrix QC

DATE/REVISIONS:

5-16-03

1. Cancel - 001 per Client2. Sample - 002 Add Ag, As, B, Ba, Bi, Cd, Cr3. Hg, Ni, Pb, Sb, Se / EL: Cl, FI, NO, NO₂, PO₄4. SO₄, INH₃N, ICNTO, LPH

5.

6.

Lionville Laboratory Use Only

Samples were:

1) Shipped ☒ or
Hand Delivered ☐Airbill # 7932 4751 32912) Ambient or ☒ Chilled3) Received in Good
Condition ☒ or N4) Samples
Properly Preserved ☒ or N5) Received Within
Holding Times ☒ or N6) Received Within
Holding Times ☒ or N

Tamper Resistant Seal was:

1) Present on Outer
Package ☒ or N2) Unbroken on Outer
Package ☒ or N3) Present on Sample
Package ☒ or N4) Unbroken on
Sample ☒ or NCOC Record Present
Upon Sample Rec't ☒ or NCooler
Temp. 12 °C

Relinquished by	Received by	Date	Time
<u>Y. J. J.</u>	<u>D. Johnson</u>	<u>5-14-03</u>	<u>0735</u>

Relinquished by	Received by	Date	Time
<u>Y. J. J.</u>	<u>D. Johnson</u>	<u>5-14-03</u>	<u>0735</u>

 Discrepancies Between
 Samples Labels and
 COC Record? Y or ☒ N
 NOTES:

 ORIGINAL
 REWRITTEN

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-87		Page 1 of 1	
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N Data Turnaround 30 Days	
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-37 (C4106); (272.5'-275')		SAF No. F03-006		Air Quality <input type="checkbox"/>			
Ice Chest No. ERC 02 404 ERC 99-005		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Government Vehicle			
Shipped To MS 5-12-03 Waste Sampling & Characterization Heera		Offsite Property No. A030229		Bill of Lading/Air Bill No. SEA-OSPC					
POSSIBLE SAMPLE HAZARDS/REMARKS Special Handling and/or Storage				Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	
				Type of Container	Gs*	aG	Gs*	G/R	
				No. of Container(s)	73	1	73	MS 5-12-03	
				Volume	40mL	40mL	40mL	40mL	
SAMPLE ANALYSIS				See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.		
Sample No.	Matrix *	Sample Date	Sample Time						
B16WB4	SOIL	5/8/03	1025	X	X	X	X		
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		<p>** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.</p> <p>(1) VOA - 8260A (TCL); VOA - 8260A (Add-On) (2-Pentanone, Benzyl alcohol, n-Butylbenzene)</p> <p>(2) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (2-Butoxyethanol, Tributyl phosphate); TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G; PCBs - 8082</p> <p>(3) Alcohols, Glycols, & Ketones - 8015 (Diethyl ether, Ethylene glycol, Methanol)</p> <p>(4) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Antimony-125, Cesium-134, Radium-226, Radium-228, Tin-126); Isotopic Plutonium; Americium-241; Isotopic Uranium; Trace Elements ICP/MS - 200.8 (Complete) (Antimony, Arsenic, Barium, Beryllium, Chromium, Copper, Lead, Mercury, Nickel, Silver, Uranium); ICP Metals - 6010A (Add-on) (Bismuth, Boron); ICP Anions - 300.0 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate); Cyanide (Total) - 335.2; Cations (IC) - 300.7 (Nitrogen in ammonium); pH (Soil) - 9045</p> <p>Personnel not available to relinquish samples from the 3728 Ref # 1A on 5/12/03</p>	
J.S. Pope		5/8/03 1120		R. Nelson		5/8/03 1120			
R. Nelson		5/8/03 1300		R. Nelson		5/8/03 1415			
R. Nelson		5/8/03 1415		R. Nelson		5/8/03 1415			
REF 1A 3728		5/13/03 1300		S. J. Hulstrom		5/13/03 1300			
S. J. Hulstrom		5/13/03 1300		FED EX		5/14/03 0935			
LABORATORY SECTION		Received By		Date/Time		Disposal Method		Date/Time	
FINAL SAMPLE DISPOSITION		Received By		Date/Time		Disposal Method		Date/Time	

LIONVILLE LABORATORY INCORPORATED

SAMPLE RECEIPT CHECKLIST

CLIENT: TNU Handred

Purchase Order/Project:

DATE: 5-14-03

AF# / SOW# / Release #: F03-006

Laboratory SDG #:

03051403

NOTE: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION

- | | | | | |
|--|---|-----------------------------|---|--|
| 1. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 2. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 3. Airbill # recorded? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 4. All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 5. Sample containers are intact? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 7. All samples on coc received? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 8. All sample label information matches coc? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 10. Shipment meets LVLJ Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 11. Where applicable, bar code labels are affixed to coc? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 12. coc signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 13. coc will be faxed or emailed to client? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 14. Project Manager/Client contacted concerning discrepancies? (name/date) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |

Cooler # / temp (°C) and Comments:

ECC 02-404 / 1.2°

Laboratory Sample Custodian:

[Signature]

Laboratory Project Manager:

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2208



DATE RECEIVED: 05/14/03

LVL LOT # :0305L403

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B16WB4						
SILVER, TOTAL	002	S	03L0324	05/08/03	06/09/03	06/10/03
SILVER, TOTAL	002 REP	S	03L0324	05/08/03	06/09/03	06/10/03
SILVER, TOTAL	002 MS	S	03L0324	05/08/03	06/09/03	06/10/03
ARSENIC, TOTAL	002	S	03L0324	05/08/03	06/09/03	06/10/03
ARSENIC, TOTAL	002 REP	S	03L0324	05/08/03	06/09/03	06/10/03
ARSENIC, TOTAL	002 MS	S	03L0324	05/08/03	06/09/03	06/10/03
BORON, TOTAL	002	S	03L0324	05/08/03	06/09/03	06/10/03
BORON, TOTAL	002 REP	S	03L0324	05/08/03	06/09/03	06/10/03
BORON, TOTAL	002 MS	S	03L0324	05/08/03	06/09/03	06/10/03
BARIUM, TOTAL	002	S	03L0324	05/08/03	06/09/03	06/10/03
BARIUM, TOTAL	002 REP	S	03L0324	05/08/03	06/09/03	06/10/03
BARIUM, TOTAL	002 MS	S	03L0324	05/08/03	06/09/03	06/10/03
BERYLLIUM, TOTAL	002	S	03L0324	05/08/03	06/09/03	06/10/03
BERYLLIUM, TOTAL	002 REP	S	03L0324	05/08/03	06/09/03	06/10/03
BERYLLIUM, TOTAL	002 MS	S	03L0324	05/08/03	06/09/03	06/10/03
BISMUTH, TOTAL	002	S	03L0324	05/08/03	06/09/03	06/10/03
BISMUTH, TOTAL REP	002 REP	S	03L0324	05/08/03	06/09/03	06/10/03
BISMUTH, TOTAL SPIKE	002 MS	S	03L0324	05/08/03	06/09/03	06/10/03
CADMIUM, TOTAL	002	S	03L0324	05/08/03	06/09/03	06/10/03
CADMIUM, TOTAL	002 REP	S	03L0324	05/08/03	06/09/03	06/10/03
CADMIUM, TOTAL	002 MS	S	03L0324	05/08/03	06/09/03	06/10/03
CHROMIUM, TOTAL	002	S	03L0324	05/08/03	06/09/03	06/10/03
CHROMIUM, TOTAL	002 REP	S	03L0324	05/08/03	06/09/03	06/10/03
CHROMIUM, TOTAL	002 MS	S	03L0324	05/08/03	06/09/03	06/10/03
COPPER, TOTAL	002	S	03L0324	05/08/03	06/09/03	06/10/03
COPPER, TOTAL	002 REP	S	03L0324	05/08/03	06/09/03	06/10/03
COPPER, TOTAL	002 MS	S	03L0324	05/08/03	06/09/03	06/10/03
MERCURY, TOTAL	002	S	03C0131	05/08/03	06/04/03	06/04/03
MERCURY, TOTAL	002 REP	S	03C0131	05/08/03	06/04/03	06/04/03
MERCURY, TOTAL	002 MS	S	03C0131	05/08/03	06/04/03	06/04/03
NICKEL, TOTAL	002	S	03L0324	05/08/03	06/09/03	06/10/03
NICKEL, TOTAL	002 REP	S	03L0324	05/08/03	06/09/03	06/10/03
NICKEL, TOTAL	002 MS	S	03L0324	05/08/03	06/09/03	06/10/03
LEAD, TOTAL	002	S	03L0324	05/08/03	06/09/03	06/10/03
LEAD, TOTAL	002 REP	S	03L0324	05/08/03	06/09/03	06/10/03

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2208

DATE RECEIVED: 05/14/03

LVL LOT # :0305L403

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
LEAD, TOTAL	002 MS	S	03L0324	05/08/03	06/09/03	06/10/03
ANTIMONY, TOTAL	002	S	03L0324	05/08/03	06/09/03	06/10/03
ANTIMONY, TOTAL	002 REP	S	03L0324	05/08/03	06/09/03	06/10/03
ANTIMONY, TOTAL	002 MS	S	03L0324	05/08/03	06/09/03	06/10/03
SELENIUM, TOTAL	002	S	03L0324	05/08/03	06/09/03	06/10/03
SELENIUM, TOTAL	002 REP	S	03L0324	05/08/03	06/09/03	06/10/03
SELENIUM, TOTAL	002 MS	S	03L0324	05/08/03	06/09/03	06/10/03

LAB QC:

SILVER LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
SILVER, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
ARSENIC LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
ARSENIC, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
BORON LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
BORON, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
BARIUM LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
BARIUM, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
BERYLLIUM LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
BERYLLIUM, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
BISMUTH, LCS	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
BISMUTH, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
CADMIUM LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
CADMIUM, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
CHROMIUM LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
CHROMIUM, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
COPPER LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
COPPER, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
MERCURY LABORATORY	LC1 BS	S	03C0131	N/A	06/04/03	06/04/03
MERCURY, TOTAL	MB1	S	03C0131	N/A	06/04/03	06/04/03
NICKEL LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
NICKEL, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
LEAD LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
LEAD, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
ANTIMONY LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
ANTIMONY, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
SELENIUM LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
SELENIUM, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03



Analytical Report

Client: TNU-HANFORD F03-006
LVL#: 0305L403
SDG/SAF#: H2208/F03-006

W.O.#: 11343-606-001-9999-00
Date Received: 05-14-03


METALS CASE NARRATIVE

1. This narrative covers the analyses of 1 soil sample.
2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary.
3. All analyses were performed within the required holding times.
4. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).
6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).
7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.
8. All ICP Interference Check Standards were within control limits.
9. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to the Inorganics Laboratory Control Standards Report.
10. The matrix spike (MS) recoveries for 2 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.
11. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. A PDS was prepared at meaningful concentration level for the following analytes:

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 16 pages.

<u>Sample ID</u>	<u>Element</u>	<u>PDS</u>	<u>PDS</u>
		<u>Concentration (ppb)</u>	<u>% Recovery</u>
B16WB4	Chromium	100	94.6
	Antimony	100	104.3

12. The duplicate analyses for 3 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.
13. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.
14. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.


 Iain Daniels
 Laboratory Manager
 Lionville Laboratory Incorporated

jjw/m05-403

6/17/03
 Date

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Lot#: 0305L403

Leaching Procedure: 1310 1311 1312 Other:

CLP Metals Digestion and Analysis Methods: ILM03.0 ILM04.0

Metals Digestion Methods: 3005A 3010A 3015 3020A X3050B 3051 200.7 SS17
 Other:

Metals Analysis Methods

	SW846	EPA	STD MTD	EPA OSWR	USATHAMA
Aluminum	<u> 6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Antimony	<u> X6010B </u> <u> 7041^s </u>	<u> 200.7 </u> <u> 204.2 </u>			<u> 99 </u>
Arsenic	<u> X6010B </u> <u> 7060A^s </u>	<u> 200.7 </u> <u> 206.2 </u>	<u> 3113B </u>		<u> 99 </u>
Barium	<u> X6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Beryllium	<u> X6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Bismuth	<u> X6010B¹ </u>	<u> 200.7¹ </u>		<u> 1620 </u>	<u> 99 </u>
Boron	<u> X6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Cadmium	<u> X6010B </u> <u> 7131A^s </u>	<u> 200.7 </u> <u> 213.2 </u>			<u> 99 </u>
Calcium	<u> 6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Chromium	<u> X6010B </u> <u> 7191^s </u>	<u> 200.7 </u> <u> 218.2 </u>			<u> SS17 </u>
Cobalt	<u> 6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Copper	<u> X6010B </u> <u> 7211^s </u>	<u> 200.7 </u> <u> 220.2 </u>			<u> 99 </u>
Iron	<u> 6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Lead	<u> X6010B </u> <u> 7421^s </u>	<u> 200.7 </u> <u> 239.2 </u>	<u> 3113B </u>		<u> 99 </u>
Lithium	<u> 6010B </u> <u> 7430⁴ </u>	<u> 200.7 </u>		<u> 1620 </u>	<u> 99 </u>
Magnesium	<u> 6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Manganese	<u> 6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Mercury	<u> 7470A^s </u> <u> X7471A^s </u>	<u> 245.1² </u> <u> 245.5² </u>			<u> 99 </u>
Molybdenum	<u> 6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Nickel	<u> X6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Potassium	<u> 6010B </u> <u> 7610⁴ </u>	<u> 200.7 </u> <u> 258.1⁴ </u>			<u> 99 </u>
Rare Earths	<u> 6010B¹ </u>	<u> 200.7¹ </u>		<u> 1620 </u>	<u> 99 </u>
Selenium	<u> X6010B </u> <u> 7740^s </u>	<u> 200.7 </u> <u> 270.2 </u>	<u> 3113B </u>		<u> 99 </u>
Silicon	<u> 6010B¹ </u>	<u> 200.7 </u>		<u> 1620 </u>	<u> 99 </u>
Silica	<u> 6010B </u>	<u> 200.7 </u>		<u> 1620 </u>	<u> 99 </u>
Silver	<u> X6010B </u> <u> 7761^s </u>	<u> 200.7 </u> <u> 272.2 </u>			<u> 99 </u>
Sodium	<u> 6010B </u> <u> 7770⁴ </u>	<u> 200.7 </u> <u> 273.1⁴ </u>			<u> 99 </u>
Strontium	<u> 6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Thallium	<u> 6010B </u> <u> 7841^s </u>	<u> 200.7 </u> <u> 279.2 </u> <u> 200.9 </u>			<u> 99 </u>
Tin	<u> 6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Titanium	<u> 6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Uranium	<u> 6010B¹ </u>	<u> 200.7¹ </u>		<u> 1620 </u>	<u> 99 </u>
Vanadium	<u> 6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Zinc	<u> 6010B </u>	<u> 200.7 </u>			<u> 99 </u>
Zirconium	<u> 6010B¹ </u>	<u> 200.7¹ </u>		<u> 1620 </u>	<u> 99 </u>

Other:

Method:

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
LCS = Laboratory Control Sample.
NC = Not calculated.

ANALYTICAL METAL METHODS

1. Not included in the method element list.
2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, approximately 0.3 grams of sample is taken to a final volume of 50 mL (including all reagents).
3. Flame AA.
4. Graphite Furnace AA.

L-WI-033/N-04/98

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/16/03

CLIENT: TNUHANFORD F03-006 H2208

LVL LOT #: 0305L403

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
=====	=====	=====	=====	=====	=====	=====
-002	B16WB4	Silver, Total	0.12 u	MG/KG	0.12	1.0
		Arsenic, Total	1.2	MG/KG	0.34	1.0
		Boron, Total	0.84	MG/KG	0.20	1.0
		Barium, Total	49.3	MG/KG	0.02	1.0
		Beryllium, Total	0.01 u	MG/KG	0.01	1.0
		Bismuth, Total	0.53 u	MG/KG	0.53	1.0
		Cadmium, Total	0.18	MG/KG	0.04	1.0
		Chromium, Total	7.1	MG/KG	0.10	1.0
		Copper, Total	11.5	MG/KG	0.06	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	7.7	MG/KG	0.13	1.0
		Lead, Total	4.5	MG/KG	0.24	1.0
		Antimony, Total	0.58	MG/KG	0.23	1.0
		Selenium, Total	0.43 u	MG/KG	0.43	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 06/16/03

CLIENT: TNUHANFORD P03-006 H2208

LVL LOT #: 0305L403

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-----	-----	-----	-----	-----	-----	-----
BLANK1	03L0324-MB1	Silver, Total	0.12 u	MG/KG	0.12	1.0
		Arsenic, Total	0.33 u	MG/KG	0.33	1.0
		Boron, Total	0.19 u	MG/KG	0.19	1.0
		Barium, Total	0.03	MG/KG	0.02	1.0
		Beryllium, Total	0.01 u	MG/KG	0.01	1.0
		Bismuth, Total	0.51 u	MG/KG	0.51	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	0.12	MG/KG	0.10	1.0
		Copper, Total	0.08	MG/KG	0.06	1.0
		Nickel, Total	0.13 u	MG/KG	0.13	1.0
		Lead, Total	0.24	MG/KG	0.23	1.0
		Antimony, Total	0.27	MG/KG	0.22	1.0
		Selenium, Total	0.42 u	MG/KG	0.42	1.0
BLANK1	03C0131-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 06/16/03

CLIENT: TNUHANFORD F03-006 H2208

LVL LOT #: 03051403

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-----	-----	-----	-----	-----	-----	-----	-----
-002	B16WB4	Silver, Total	4.9	0.12u	5.1	96.1	1.0
		Arsenic, Total	179	1.2	204	87.1	1.0
		Boron, Total	86.9	0.84	102	84.4	1.0
		Barium, Total	224	49.3	204	85.7	1.0
		Beryllium, Total	4.6	0.01u	5.1	90.2	1.0
		Bismuth, Total	439	0.53u	510	86.1	1.0
		Cadmium, Total	4.9	0.18	5.1	92.5	1.0
		Chromium, Total	44.0	7.1	20.4	180.9	1.0
		Copper, Total	34.2	11.5	25.5	89.0	1.0
		Mercury, Total	0.17	0.02u	0.17	99.4	1.0
		Nickel, Total	61.9	7.7	51.0	106.3	1.0
		Lead, Total	49.2	4.5	51.0	87.6	1.0
		Antimony, Total	31.8	0.58	51.0	61.2	1.0
		Selenium, Total	166	0.43u	204	81.1	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 06/16/03

CLIENT: TNUHANFORD P03-006 H2208
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305L403

SAMPLE	SITE ID	ANALYTE	INITIAL	REPLICATE RPD		DILUTION
			RESULT			FACTOR (REP)
*****	*****	*****	*****	*****	*****	*****
-002REP	B16WB4	Silver, Total	0.12u	0.12u	NC	1.0
		Arsenic, Total	1.2	1.0	18.2	1.0
		Boron, Total	0.84	0.64	26.2	1.0
		Barium, Total	49.3	49.3	0.00	1.0
		Beryllium, Total	0.01u	0.01u	NC	1.0
		Bismuth, Total	0.53u	0.52u	NC	1.0
		Cadmium, Total	0.18	0.20	8.6	1.0
		Chromium, Total	7.1	8.1	13.2	1.0
		Copper, Total	11.5	11.5	0.00	1.0
		Mercury, Total	0.02u	0.02u	NC	1.0
		Nickel, Total	7.7	7.7	0.00	1.0
		Lead, Total	4.5	8.1	57.1	1.0
		Antimony, Total	0.58	1.1	61.3	1.0
		Selenium, Total	0.43u	0.42u	NC	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 06/16/03

CLIENT: TNUHANFORD F03-006 H2208

LVL LOT #: 0305L403

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
=====	=====	=====	=====	=====	=====	=====
LCS1	03L0324-LC1	Silver, LCS	50.8	50.0	MG/KG	101.6
		Arsenic, LCS	929	1000	MG/KG	92.9
		Boron, LCS	460	500	MG/KG	91.9
		Barium, LCS	493	500	MG/KG	98.6
		Beryllium, LCS	24.8	25.0	MG/KG	99.2
		Bismuth, LCS	472	500	MG/KG	94.5
		Cadmium, LCS	24.7	25.0	MG/KG	98.8
		Chromium, LCS	51.8	50.0	MG/KG	103.6
		Copper, LCS	126	125	MG/KG	101.1
		Nickel, LCS	198	200	MG/KG	99.0
		Lead, LCS	242	250	MG/KG	96.6
		Antimony, LCS	287	300	MG/KG	95.6
		Selenium, LCS	860	1000	MG/KG	86.0
LCS1	03C0131-LC1	Mercury, LCS	6.4	6.2	MG/KG	102.5

Custody Transfer Record/Lab Work Request Page 1 of 1



FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Q30SL403

Client: <u>TN&H-Hamford F03-006</u>	Refrigerator #	A-C	D	E-G	H	I	J
Est. Final Proj. Sampling Date	#/Type Container	Liquid	3				
Project # <u>1343-606-001-1999-00</u>		Solid	30g	60g			
Project Contact/Phone #	Volume	Liquid					
Lionville Laboratory Project Manager <u>Debbie Johnson</u>		Solid	40	80			
QC <u>SPEC</u> Del <u>STD</u> TAT <u>30 days</u>	Preservatives		-	-			
Date Rec'd <u>5-14-03</u> Date Due <u>6-13-03</u>	ANALYSES REQUESTED	ORGANIC			INORG		
		VOA	BNA	Pest/PCB	Herb	Metal	CN

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓)		Matrix	Date Collected	Time Collected	Lionville Laboratory Use Only									
			MS	MSD				0624H	0625X	0626A	0627B	0628C	0629D	0630E	0631F	0632G	0633H
S - Soil																	
SE - Sediment																	
SO - Solid																	
SL - Sludge																	
W - Water																	
O - Oil																	
A - Air																	
DS - Drum																	
DL - Drum																	
L - Liquid																	
EP/ACLP																	
Leachate																	
WI - Wipe																	
X - Other																	
F - Fish																	

Special Instructions: SAF # F03-006Rem Matrix QC

DATE/REVISIONS:

- 5-16-03 1. Cancel - 001 per Client
2. Sample - 002 Add Ag, As, B, Ba, Be, Bi, Cd, Cr
3. Hg, Ni, Pb, Sb, Se / ZC: Cl, Fl, NO₂, NO₃, PO₄
4. SO₄, INH₂N, ICNTO, LPH
5. _____
6. _____

Lionville Laboratory Use Only

- Samples were: 1) Shipped ☒ or Hand Delivered _____
- Airbill # 1932 4751 3291
- 2) Ambient or ☒ Chilled
- 3) Received in Good Condition ☒ or N
- 4) Samples Properly Preserved ☒ or N
- 5) Received Within Holding Times ☒ or N
- Tamper Resistant Seal was: 1) Present on Outer Package ☒ or N
- 2) Unbroken on Outer Package ☒ or N
- 3) Present on Sample ☒ or N
- 4) Unbroken on Sample ☒ or N
- COC Record Present Upon Sample Rec't ☒ or N
- Cooler Temp. 12 °C

Relinquished by	Received by	Date	Time
<u>Yeddy</u>	<u>D. Smith</u>	<u>5-14-03</u>	<u>0935</u>

Relinquished by	Received by	Date	Time
<u>Yeddy</u>	<u>D. Smith</u>	<u>5-14-03</u>	<u>0935</u>

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

ORIGINAL
REWRITTEN

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-86		Page 1 of 1	
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N Data Turnaround 30 Days	
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-37 (C4106); (237.5'-240')		SAF No. F03-006		Air Quality <input type="checkbox"/>			
Ice Chest No. ERC 02 904 EEL 49-005/AS 51303		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Government Vehicle			
Shipped To MDS/12/03 Waste Sampling & Characterization Reera		Offsite Property No. N/A 2030 229		Bill of Lading/Air Bill No. N/A 2030 229		SEE OSPC			
POSSIBLE SAMPLE HAZARDS/REMARKS Special Handling and/or Storage 200306e1				Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	
				Type of Container	Gs*	aG	Gs*	G/P	
				No. of Container(s)	3	1	3	✓	
				Volume	40mL	250mL	40mL	500mL	
SAMPLE ANALYSIS				See item (1) in Special Instructions	See item (2) in Special Instructions	See item (3) in Special Instructions	See item (4) in Special Instructions		
Sample No.	Matrix *	Sample Date	Sample Time						
B16WB3	SOIL	5-7-03	1050	X	X	X	X		
W03000375									
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		<p>** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.</p> <p>(1) VOA - 8260A (TCL); VOA - 8260A (Add-On) (2-Pentanone, Benzyl alcohol, n-Butylbenzene)</p> <p>(2) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (2-Butoxyethanol, Tributyl phosphate); TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G; PCBs - 8082</p> <p>(3) Alcohols, Glycols, & Ketones - 8015 (1-Butanol, Diethyl ether, Ethylene glycol, Methanol)</p> <p>(4) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Antimony-125, Cesium-134, Radium-226, Radium-228, Th-232); Isotopic Plutonium; Americium-241; Isotopic Uranium; Trace Elements (ICRAMS - 200.8 (Complete) (Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, Uranium); ICP Metals - 8010A (Add-on) (Bismuth, Boron); 16 Anions - 300.0 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate); Cyanide (Total) - 355.2, Cations (IC) - 300.7 (Nitrogen in ammonium); pH (Soil) - 0045</p> <p>Personnel not available to relinquish samples from the 3728 Ref # 1A on 5/13/03</p>	
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time			
LABORATORY SECTION		Received By		Date/Time		Disposed By		Date/Time	
FINAL SAMPLE DISPOSITION		Disposal Method		Date/Time		Disposal Method		Date/Time	

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-87		Page 1 of 1	
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N Data Turnaround 30 Days	
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-37 (C4106); (272.5'-275')		SAF No. F03-006		Air Quality <input type="checkbox"/>			
Ice Chest No. ERC 02 404 ERC 02 005		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Government Vehicle			
Shipped To Waste Sampling & Characterization MS 5-12-03 Becca		Offsite Property No. N/A 470-27 A030229		Bill of Lading/Air Bill No. N/A 470-5703 SEB-OSPC					
POSSIBLE SAMPLE HAZARDS/REMARKS				Preservation		Cool 4C		Cool 4C	
Special Handling and/or Storage				Type of Container		Gs*		Gs*	
				No. of Container(s)		1		3	
				Volume		40mL		40mL	
SAMPLE ANALYSIS				See item (1) in Special Instructions.		See item (2) in Special Instructions.		See item (3) in Special Instructions.	
Sample No.		Matrix *		Sample Date		Sample Time			
B16WB4		SOIL		5/8/03		1025		X X X X	
CHAIN OF POSSESSION				Sign/Print Names		SPECIAL INSTRUCTIONS			
Relinquished By/Removed From J.S. Pope		Date/Time 5/8/03 1120		Received By/Stored In Becca		Date/Time 5/8/03 1120		** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.	
Relinquished By/Removed From Becca		Date/Time 5/8/03 1300		Received By/Stored In M. Hulstrom		Date/Time 5/8/03 1300		(1) VOA - 8260A (TCL); VOA - 8260A (Add-On) (2-Pentanone, Benzyl alcohol, n-Butylbenzene)	
Relinquished By/Removed From M. Hulstrom		Date/Time 5/8/03 1445		Received By/Stored In R. Nickson		Date/Time 5/8/03 1445		(2) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (2-Butoxyethanol, Tributyl phosphate); TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G; PCBs - 8082	
Relinquished By/Removed From R. Nickson		Date/Time 5/8/03 1445		Received By/Stored In REF 1A 3728		Date/Time 5/8/03 1445		(3) Alcohols, Glycols, & Ketones - 8015 (Diethyl ether, Ethylene glycol, Methanol)	
Relinquished By/Removed From REF 1A 3728		Date/Time 5/8/03 1300		Received By/Stored In S. Hulstrom		Date/Time 5/8/03 1300		(4) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Antimony-125, Cesium-134, Radium-226, Radium-228, Thorium-232); Isotopic	
Relinquished By/Removed From S. Hulstrom		Date/Time 5/8/03 1300		Received By/Stored In FED EX		Date/Time 5/8/03 1300		Plutonium-241, Isotope Uranium, Trace Elements (ICP/MS - 200.8 (Complete) (Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Silver, Uranium); ICP Metals - 6010A (Add-on) (Bismuth, Boron); IG-Arson - 300.0 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate); Cyanide (Total) - 335.2; Cations (IC) - 300.7 (Nitrogen in ammonium); pH (Soil) - 9045	
LABORATORY SECTION		Received By Becca		Date/Time 5/8/03 0935		Date/Time 5/8/03 1735		Personnel not available to relinquish samples from the 3728 Ref # 1A on 5/12/03	
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By		Date/Time		Matrix *	

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					F03-006-72		Page 1 of 1		
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N		Data Turnaround 45 Days	
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-37 (C4106); (272.5'-275')		SAF No. F03-006		Air Quality <input type="checkbox"/>					
Ice Chest No. ERC 02 404		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express					
Shipped To RELRA EDERLINE SERVICES (Formerly TMA) 4/22/03		Offsite Property No. A030229				Bill of Lading/Air Bill No. SEE OSPC					
POSSIBLE SAMPLE HAZARDS/REMARKS			Preservation		Cool 4C	Cool 4C	Cool 4C	None	None		
Special Handling and/or Storage			Type of Container		aG	aG	aG	aG	aG		
			No. of Container(s)		1	1	1	1	1		
			Volume		120mL	60mL	120mL	60mL	60mL		
SAMPLE ANALYSIS			Chromium Hex - 7196		NO2/NO3 - 353.2		Oil & Grease - 413.1		See Item (1) in Special Instructions.		Tritium - H3
											Tie To
Sample No.	Matrix *	Sample Date	Sample Time								
B16W89	SOIL	5/8/03	1025	X	X	X					Blow D5
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS 4/22/03				Matrix *			
Relinquished By/Removed From RELRA Date/Time 5-8-03 1415				Received By/Stored In RELRA Date/Time 5-8-03 1415				<p>** The laboratory is to achieve a detection limit of 30.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.</p> <p>(1) Technetium-99; Strontium-89,90 - Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-129; Nickel-63; Neptunium-237</p> <p>4/22/03</p> <p>Personnel not available to relinquish samples from the 3728 Ref # 1A on 5/13/03</p>			
Relinquished By/Removed From RELRA Date/Time 5/8/03 1415				Received By/Stored In RELRA Date/Time 5/8/03 1415							
Relinquished By/Removed From RELRA Date/Time 5/13/03 1300				Received By/Stored In RELRA Date/Time 5/13/03 1300							
Relinquished By/Removed From RELRA Date/Time 5/13/03 1300				Received By/Stored In RELRA Date/Time 5/13/03 1300							
Relinquished By/Removed From RELRA Date/Time 5/14/03 0935				Received By/Stored In RELRA Date/Time 5/14/03 0935							
Relinquished By/Removed From				Received By/Stored In							
LABORATORY SECTION		Received By		Title		Date/Time					
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By		Date/Time					

LIONVILLE LABORATORY INCORPORATED

SAMPLE RECEIPT CHECKLIST

NT: TNU Handford

ase Order/Project:

DATE: 5-14-03

SOW# / Release #: F03-006

atory SDG #:

03051403

E: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION

1. Custody seals on coolers or shipping container intact, signed and dated?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	<input type="checkbox"/> see Comment #
2. Outside of coolers or shipping containers are free from damage?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	<input type="checkbox"/> see Comment #
3. Airbill # recorded?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	<input type="checkbox"/> see Comment #
4. All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid)	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	<input type="checkbox"/> see Comment #
5. Sample containers are intact?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	<input type="checkbox"/> see Comment #
6. Custody seals on sample containers intact, signed and dated?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	<input type="checkbox"/> see Comment #
7. All samples on coc received?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	<input type="checkbox"/> see Comment #
8. All sample label information matches coc?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	<input type="checkbox"/> see Comment #
9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A	<input type="checkbox"/> see Comment #
10. Shipment meets LvLl Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy)	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	<input type="checkbox"/> see Comment #
11. Where applicable, bar code labels are affixed to coc?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A	<input type="checkbox"/> see Comment #
12. coc signed and dated?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	<input type="checkbox"/> see Comment #
13. coc will be faxed or emailed to client?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	<input type="checkbox"/> see Comment #
14. Project Manager/Client contacted concerning discrepancies? (name/date)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A	<input type="checkbox"/> see Comment #

Cooler # / temp (°C) and Comments:

ERC 02-404 / 1.2°

Laboratory Sample Custodian:

[Signature]

Laboratory Project Manager:

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2208



DATE RECEIVED: 05/14/03

LVL LOT # :0305L403

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
---------------------	-------	-----	--------	------------	-----------	----------

B16WB4

% SOLIDS	002	S	03L*S067	05/08/03	05/16/03	05/19/03
CHLORIDE BY IC	002	S	03LIC032	05/08/03	05/21/03	05/21/03
CHLORIDE BY IC	002 REP	S	03LIC032	05/08/03	05/21/03	05/21/03
CHLORIDE BY IC	002 MS	S	03LIC032	05/08/03	05/21/03	05/21/03
FLUORIDE BY IC	002	S	03LIC032	05/08/03	05/21/03	05/21/03
FLUORIDE BY IC	002 REP	S	03LIC032	05/08/03	05/21/03	05/21/03
FLUORIDE BY IC	002 MS	S	03LIC032	05/08/03	05/21/03	05/21/03
NITRITE BY IC	002	S	03LIC032	05/08/03	05/21/03	05/21/03
NITRITE BY IC	002 REP	S	03LIC032	05/08/03	05/21/03	05/21/03
NITRITE BY IC	002 MS	S	03LIC032	05/08/03	05/21/03	05/21/03
NITRATE BY IC	002	S	03LIC032	05/08/03	05/21/03	05/21/03
NITRATE BY IC	002 REP	S	03LIC032	05/08/03	05/21/03	05/21/03
NITRATE BY IC	002 MS	S	03LIC032	05/08/03	05/21/03	05/21/03
TOTAL CYANIDE	002	S	03LC047	05/08/03	05/22/03	05/22/03
TOTAL CYANIDE	002 REP	S	03LC047	05/08/03	05/22/03	05/22/03
TOTAL CYANIDE	002 MS	S	03LC047	05/08/03	05/22/03	05/22/03
PHOSPHATE BY IC	002	S	03LIC032	05/08/03	05/21/03	05/21/03
PHOSPHATE BY IC	002 REP	S	03LIC032	05/08/03	05/21/03	05/21/03
PHOSPHATE BY IC	002 MS	S	03LIC032	05/08/03	05/21/03	05/21/03
SULFATE BY IC	002	S	03LIC032	05/08/03	05/21/03	05/21/03
SULFATE BY IC	002 REP	S	03LIC032	05/08/03	05/21/03	05/21/03
SULFATE BY IC	002 MS	S	03LIC032	05/08/03	05/21/03	05/21/03
AMMONIA	002	S	03LAMA14	05/08/03	05/24/03	05/26/03
AMMONIA	002 REP	S	03LAMA14	05/08/03	05/24/03	05/26/03
AMMONIA	002 MS	S	03LAMA14	05/08/03	05/24/03	05/26/03
PH	002	S	03LPH035	05/08/03	05/20/03	05/20/03
PH	002 REP	S	03LPH035	05/08/03	05/20/03	05/20/03

B16W89

% SOLIDS	003	S	03L*S067	05/08/03	05/16/03	05/19/03
% SOLIDS	003 REP	S	03L*S067	05/08/03	05/16/03	05/19/03
CHROMIUM VI	003	S	03LVI044	05/08/03	05/23/03	05/23/03
CHROMIUM VI	003 REP	S	03LVI044	05/08/03	05/23/03	05/23/03
CHROMIUM VI	003 MS	S	03LVI044	05/08/03	05/23/03	05/23/03

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-006 H2208

DATE RECEIVED: 05/14/03

LVL LOT # :0305L403

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHROMIUM VI	003 MSD	S	03LVI044	05/08/03	05/23/03	05/23/03
NITRATE NITRITE	003	S	03LN3A27	05/08/03	05/22/03	05/22/03
NITRATE NITRITE	003 REP	S	03LN3A27	05/08/03	05/22/03	05/22/03
NITRATE NITRITE	003 MS	S	03LN3A27	05/08/03	05/22/03	05/22/03
OIL & GREASE BY GRAV	003	S	03LOG023	05/08/03	06/04/03	06/05/03
OIL AND GREASE BY GR	003 REP	S	03LOG023	05/08/03	06/04/03	06/05/03
OIL AND GREASE BY GR	003 MS	S	03LOG023	05/08/03	06/04/03	06/05/03

LAB QC:

CHLORIDE BY IC	MB1	S	03LIC032	N/A	05/21/03	05/21/03
CHLORIDE BY IC	MB1 BS	S	03LIC032	N/A	05/21/03	05/21/03
FLUORIDE BY IC	MB1	S	03LIC032	N/A	05/21/03	05/21/03
FLUORIDE BY IC	MB1 BS	S	03LIC032	N/A	05/21/03	05/21/03
NITRITE BY IC	MB1	S	03LIC032	N/A	05/21/03	05/21/03
NITRITE BY IC	MB1 BS	S	03LIC032	N/A	05/21/03	05/21/03
NITRATE BY IC	MB1	S	03LIC032	N/A	05/21/03	05/21/03
NITRATE BY IC	MB1 BS	S	03LIC032	N/A	05/21/03	05/21/03
TOTAL CYANIDE	LCS L	S	03LC047	N/A	05/22/03	05/22/03
TOTAL CYANIDE	LCS L	S	03LC047	N/A	05/22/03	05/22/03
TOTAL CYANIDE	MB1	S	03LC047	N/A	05/22/03	05/22/03
PHOSPHATE BY IC	MB1	S	03LIC032	N/A	05/21/03	05/21/03
PHOSPHATE BY IC	MB1 BS	S	03LIC032	N/A	05/21/03	05/21/03
SULFATE BY IC	MB1	S	03LIC032	N/A	05/21/03	05/21/03
SULFATE BY IC	MB1 BS	S	03LIC032	N/A	05/21/03	05/21/03
AMMONIA	MB1	S	03LAMA14	N/A	05/24/03	05/26/03
AMMONIA	MB1 BS	S	03LAMA14	N/A	05/24/03	05/26/03
AMMONIA	MB1 BSD	S	03LAMA14	N/A	05/24/03	05/26/03
CHROMIUM VI	MB1	S	03LVI044	N/A	05/23/03	05/23/03
CHROMIUM VI	MB1 BS	S	03LVI044	N/A	05/23/03	05/23/03
CHROMIUM VI	MB1 BSD	S	03LVI044	N/A	05/23/03	05/23/03
NITRATE NITRITE	MB1	S	03LN3A27	N/A	05/22/03	05/22/03
NITRATE NITRITE	MB1 BS	S	03LN3A27	N/A	05/22/03	05/22/03
OIL & GREASE BY GRAV	MB1	S	03LOG023	N/A	06/04/03	06/05/03
OIL AND GREASE BY GR	MB1 BS	S	03LOG023	N/A	06/04/03	06/05/03
OIL AND GREASE BY GR	MB1 BSD	S	03LOG023	N/A	06/04/03	06/05/03



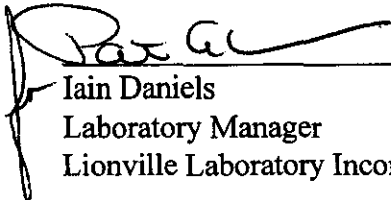
Analytical Report

Client: TNU-HANFORD F03-006 H2208
LVL#: 0305L403

W.O.#: 11343-606-001-9999-00
Date Received: 05-14-03

INORGANIC NARRATIVE

1. This narrative covers the analyses of 2 soil samples.
2. The samples were prepared and analyzed in accordance with the methods indicated on the attached glossary.
3. The sample holding times as required by the method and/or contract were met.
4. The results presented in this report are derived from samples that met LvLI's sample acceptance policy.
5. The method blanks were within the method criteria.
6. The Laboratory Control Samples (LCS) were within the laboratory control limits. The duplicate LCS for Ammonia and Oil and Grease were within the 20% Relative Percent Difference (RPD) control limit.
7. The matrix spike (MS) recoveries for Chloride, Fluoride, Nitrite, Nitrate, Total Cyanide, Phosphate, Sulfate, Ammonia, Chromium VI, Nitrate Nitrite and Oil and Grease were within the 75-125% control limits.
8. The replicate analyses for Chloride, Fluoride, Nitrite, Nitrate, Total Cyanide, Phosphate, Ammonia, pH, Percent Solids, Chromium VI, Nitrate Nitrite and Oil and Grease were within the 20% RPD control limit, however replicate analysis for Sulfate was outside the control limit that may be attributed to sample inhomogeneity.
9. Results for solid samples are reported on a dry weight basis.
10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard copy package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.


Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

06-10-03
Date

njp05-403

The results presented in this report relate to the analytical testing and conditions of the samples upon receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 16 pages.

Lionville Laboratory Incorporated

WET CHEMISTRY

METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

	<u>ASTM</u>	<u>SW846</u>	<u>OTHER</u>
% Ash	— D2216-80		
% Moisture	— D2216-80		— ILMO4.0 (e)
% Solids	✓ D2216-80		— ILMO4.0 (e)
% Volatile Solids	— D2216-80		
ASTM Extraction in Water	— D3987-81/85		
BTU	— D240-87		
CEC		— 9081	— c
Chromium VI		✓ 3060A/7196A	
Corrosivity ___ by coupon ___ by pH		— 1110(mod) — 9045C	
Cyanide, Total		✓ 9010B/9014	— ILMO4.0 (e)
Cyanide, Reactive		— Section 7.3/9014	
Halides, Extractable Organic		— 9020B	— EPA 600/4/84-008
Halides, Total		— 9020B	— EPA 600/4/84-008
EP Toxicity		— 1310A	
Flash Point		— 1010	
Ignitability		— 1010	
Oil & Grease		✓ 9071A	✓ 413.1 (mod.)
Carbon, Total Organic		— 9060	— Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions	— D240-87(mod)	— 5050	
Petroleum Hydrocarbons, Total Recoverable		— 9071	— EPA 418.1
pH, Soil		✓ 9045C	
Sulfide, Reactive		— Section 7.3/9030B	
Sulfide		— 9030B(mod)	
Specific Gravity	— D1429-76C/	— D5057-90	
Sulfur, Total		— 9056	
Synthetic Preparation Leach		— 1312	
Paint Filter		— 9095A	
Other: Chloride, Fluoride, Nitrate	Method:	EPA 300.0 (mod.)	
Other: Nitrate, Phosphate, Sulfate	Method		
Nitrate Nitrite		EPA 353.2 (mod.)	
Ammonia		EPA 350.3	

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METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

- U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.
- * = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

- MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
LC = Laboratory Control Sample.
NC = Not calculated.

A suffix of -R, -S, or -T following these codes indicate a replicate, spike or sample duplicate analysis respectively.

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.
2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).
3. Test Methods for Evaluating Solid Waste (USEPA SW-846).
 - a. Standard Methods for the Examination of Water and Waste, 16 ed, (1983).
 - b. Standard Methods for the Examination of Water and Waste, 17 ed, (1989)/18ed (1992).
 - c. Method of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd ed, (1986).
 - d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965).
 - e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.
 - f. Code of Federal Regulations.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/06/03

CLIENT: TNUHANFORD P03-006 H2208
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305L403

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	B16WB4	% Solids	96.1	%	0.01	1.0
		Chloride by IC	1.3	u MG/KG	1.3	1.0
		Fluoride by IC	1.3	u MG/KG	1.3	1.0
		Nitrite by IC	1.28	u MG/KG	1.28	1.0
		Nitrate by IC	9.01	MG/KG	1.28	1.0
		Cyanide, Total	0.28	u MG/KG	0.28	1.0
		Phosphate by IC	1.3	u MG/KG	1.3	1.0
		Sulfate by IC	7.5	MG/KG	1.3	1.0
		Ammonia, as N	4.9	u MG/KG	4.9	1.0
		pH	8.8	SOIL PH	0.01	1.0
-003	B16WB9	% Solids	97.4	%	0.01	1.0
		Chromium VI	0.41	u MG/KG	0.41	1.0
		Nitrate Nitrite	2.8	MG/KG	0.19	1.0
		Oil & Grease Gravimetri	685	u MG/KG	685	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 06/06/03

CLIENT: TNUHANFORD P03-006 H2208
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305L403

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-----	-----	-----	-----	-----	-----	-----
BLANK10	03LIC032-MB1	Chloride by IC	1.2 u	MG/KG	1.2	1.0
		Fluoride by IC	1.2 u	MG/KG	1.2	1.0
		Nitrite by IC	1.25 u	MG/KG	1.25	1.0
		Nitrate by IC	1.25 u	MG/KG	1.25	1.0
		Phosphate by IC	1.2 u	MG/KG	1.2	1.0
		Sulfate by IC	1.2 u	MG/KG	1.2	1.0
BLANK1	03LC047-MB1	Cyanide, Total	0.50 u	MG/KG	0.50	1.0
BLANK10	03LAMA14-MB1	Ammonia, as N	5.0 u	MG/KG	5.0	1.0
BLANK10	03LVI044-MB1	Chromium VI	0.40 u	MG/KG	0.40	1.0
BLANK10	03LN3A27-MB1	Nitrate Nitrite	0.20 u	MG/KG	0.20	1.0
BLANK10	03LOG023-MB1	Oil & Grease Gravimetri	667 u	MG/KG	667	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 06/06/03

CLIENT: TNUHANFORD F03-006 H2208
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305L403

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-002	B16WB4	Chloride by IC	25.7	0.44	25.7	98.5	1.0
		Fluoride by IC	25.8	0.16	25.7	99.7	1.0
		Nitrite by IC	25.4	1.28u	25.7	98.8	1.0
		Nitrate by IC	36.1	9.01	25.7	105.3	1.0
		Cyanide, Total	4.53	0.28u	4.46	101.6	1.0
		Phosphate by IC	23.2	1.3 u	25.7	90.4	1.0
		Sulfate by IC	29.3	7.5	25.7	85.1	1.0
		Ammonia, as N	198	4.9 u	199	99.7	1.0
-003	B16W89	Soluble Chromium VI	3.7	0.41u	4.1	88.0	1.0
		Insoluble Chromium VI	1440	0.41u	1280	112.6	100
		Nitrate Nitrite	7.6	2.8	4.5	105.4	1.0
		Oil & Grease Gravimetr	6270	685 u	6520	96.2	1.0
BLANK10	03LIC032-MB1	Chloride by IC	24.2	1.2 u	25.0	96.7	1.0
		Fluoride by IC	24.7	1.2 u	25.0	98.9	1.0
		Nitrite by IC	24.5	1.25u	25.0	98.1	1.0
		Nitrate by IC	24.3	1.25u	25.0	97.2	1.0
		Phosphate by IC	23.4	1.2 u	25.0	93.7	1.0
		Sulfate by IC	24.5	1.2 u	25.0	97.8	1.0
BLANK10	03LAMA14-MB1	Ammonia, as N	196	5.0 u	200	98.0	1.0
		Ammonia, as N MSD	192	5.0 u	200	96.0	1.0
BLANK10	03LVI044-MB1	Soluble Chromium VI	4.2	0.40u	4.0	104.7	1.0
		Insoluble Chromium VI	1150	0.40u	1120	102.5	100
BLANK10	03LN3A27-MB1	Nitrate Nitrite	5.2	0.20u	5.0	104.0	1.0
BLANK10	03LOG023-MB1	Oil & Grease Gravimetr	6430	667 u	6350	101.3	1.0
		Oil & Grease - Grav M	7230	667 u	6350	113.9	1.0

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 06/06/03

CLIENT: TNUHANFORD F03-006 H2208
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305L403

SAMPLE	SITE ID	ANALYTE	SPIKE#1	SPIKE#2	%DIFF
			%RECOV	%RECOV	
BLANK10	03LAMA14-MB1	Ammonia, as N	98.0	96.0	2.1
BLANK10	03LOG023-MB1	Oil & Grease - Grav	101.3	113.9	11.7

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 06/06/03

CLIENT: TNUHANFORD F03-006 H2208
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305L403

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR (REP)
-002REP	B16WB4	Chloride by IC	1.3 u	1.3 u	NC	1.0
		Fluoride by IC	1.3 u	1.3 u	NC	1.0
		Nitrite by IC	1.28u	1.28u	NC	1.0
		Nitrate by IC	9.01	8.02	11.7	1.0
		Cyanide, Total	0.28u	0.28u	NC	1.0
		Phosphate by IC	1.3 u	1.3 u	NC	1.0
		Sulfate by IC	7.5	2.7	94.8	1.0
		Ammonia, as N	4.9 u	5.2 u	NC	1.0
		pH	8.8	8.7	0.2	1.0
-003REP	B16W89	% Solids	97.4	97.4	0.082	1.0
		Chromium VI	0.41u	0.41u	NC	1.0
		Nitrate Nitrite	2.8	2.9	1.9	1.0
		Oil & Grease Gravimetri	685 u	685 u	NC	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 06/06/03

CLIENT: TNUHANFORD P03-006 H2208
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305L403

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
-----	-----	-----	-----	-----	-----	-----
LCSS1	03LC047-LCS1	Cyanide, Total LCS	1.87	2.0	MG/KG	93.7
LCSS2	03LC047-LCS2	Cyanide, Total LCS	10.1	10.0	MG/KG	101.4

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-86		Page 1 of 1	
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N Data Turnaround 30 Days	
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-37 (C4106); (237.5'-240')		SAF No. F03-006		Air Quality <input type="checkbox"/>			
Ice Chest No. ERC 02 904 EEL-49-005/AS 51303		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Government Vehicle			
Shipped To JMS/12/03 Waste Sampling & Characterization Recra		Offsite Property No. N/A A030 229		Bill of Lading/Air Bill No. N/A SEE OSC					
POSSIBLE SAMPLE HAZARDS/REMARKS Special Handling and/or Storage 20030601				Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	
				Type of Container	Gs*	uG	Gs*	G/P	
				No. of Container(s)	3	1	3	1	
				Volume	40mL	250mL	40mL	500mL	
SAMPLE ANALYSIS				See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.		
Sample No.	Matrix *	Sample Date	Sample Time						
B16WB3	SOIL	5-7-03	1050	X	X	X	X		
W03000375									
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By/Removed From Johansen/Pope/Pfister		Date/Time 5/7/03 1405		Received By/Stored In Johansen/Pope/Pfister		Date/Time 5/7/03 1405		<p>** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.</p> <p>(1) VOA - 8260A (TCL); VOA - 8260A (Add-On) (2-Pentanone, Benzyl alcohol, n-Butylbenzene)</p> <p>(2) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (2-Butoxyethanol, Tributyl phosphate); TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G; PCBs - 8082</p> <p>(3) Alcohols, Glycols, & Ketones - 8015 (1-Butanol, Diethyl ether, Ethylene glycol, Methanol)</p> <p>(4) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Antimony-125, Cesium-134, Radium-226, Radium-228, Thorium-232, Thorium-230, Uranium-235, Uranium-238, Plutonium-239, Plutonium-240, Plutonium-241, Neptunium-237, Americium-241, Isotopic Uranium, Trace Elements ICP/MS - 200.8 (Complete) (Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, Uranium); PCP Metals - 8010A (Add-on) (Bismuth, Boron); IC Anions - 300.0 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate); Cyanide (Total) - 333.2; Cations (IC) - 300.7 (Nitrogen in ammonium); pH (Soil) - 9045</p> <p>Personnel not available to relinquish samples from the 3728 Ref # 1A on 5/13/03</p>	
Relinquished By/Removed From Johansen/Pope/Pfister		Date/Time 5/8/03 1300		Received By/Stored In Johansen/Pope/Pfister		Date/Time 5/8/03 1300			
Relinquished By/Removed From Johansen/Pope/Pfister		Date/Time 5/8/03 1415		Received By/Stored In Johansen/Pope/Pfister		Date/Time 5/8/03 1415			
Relinquished By/Removed From Johansen/Pope/Pfister		Date/Time 5/8/03 1415		Received By/Stored In Johansen/Pope/Pfister		Date/Time 5/8/03 1415			
Relinquished By/Removed From Johansen/Pope/Pfister		Date/Time 5/8/03 1415		Received By/Stored In Johansen/Pope/Pfister		Date/Time 5/8/03 1415			
Relinquished By/Removed From REF 1A 3728		Date/Time 5/30/03 1300		Received By/Stored In Johansen/Pope/Pfister		Date/Time 5/30/03 1300			
Relinquished By/Removed From SJA/12/03		Date/Time 5/30/03 1300		Received By/Stored In FED EX		Date/Time 5/30/03 1300			
LABORATORY SECTION		Received By Johansen/Pope/Pfister		Date/Time 5/4/03/0935		Title 20030601			
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By		Date/Time			

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F03-006-87		Page 1 of 1	
Collector Johansen/Popc/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N Data Turnaround 30 Days	
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-37 (C4106); (272.5'-275')		SAF No. F03-006		Air Quality <input type="checkbox"/>			
Ice Chest No. ERC 02 404 ERC 99-005		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Government Vehicle			
Shipped To MOS 5-12-03 Waste Sampling & Characterization Becca		Offsite Property No. A030229		Bill of Lading/Air Bill No. SEA-OSPC					
POSSIBLE SAMPLE HAZARDS/REMARKS Special Handling and/or Storage				Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	
				Type of Container	Gs*	gG	Gs*	G/R	
				No. of Container(s)	73	1	73	73	
				Volume	40mL	40mL	40mL	40mL	
SAMPLE ANALYSIS				See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.		
Sample No.	Matrix *	Sample Date	Sample Time						
B16WB4	SOIL	5/8/03	1025	X	X	X	X		
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By/Removed From J.S. Pope 5/8/03 1120				Received By/Stored In B. Pope 5/8/03 1120				<p>** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis.</p> <p>(1) VOA - 8260A (TCL); VOA - 8260A (Add-On) (2-Pentanone, Benzyl alcohol, n-Butylbenzene)</p> <p>(2) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (2-Butoxyethanol, Tributyl phosphate); TPH-Diesel Range - WTPH-D; TPH-Gasoline Range - WTPH-G; PCBs - 8082</p> <p>(3) Alcohols, Glycols, & Ketones - 8015 (Diethyl ether, Ethylene glycol, Methanol)</p> <p>(4) Gamma Spectrometry (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Antimony-125, Cesium-134, Radium-226, Radium-228, Tin-126); Isotopic Plutonium, Americium-241, Isotopic Uranium, Trace Elements ICP/MS - 200.6 (Complete) (Antimony, Arsenic, Barium, Beryllium, Chromium, Copper, Lead, Mercury, Nickel, Silver, Uranium); ICP Metals - 6010A (Add-on) (Bismuth, Boron); IC Anions - 300.6 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate); Cyanide (Total) - 335.2; Cations (IC) - 300.7 (Nitrogen in ammonium); pH (Soil) - 9045</p> <p>Personnel not available to relinquish samples from the 3728 Ref # 1A on 5/12/03</p>	
Relinquished By/Removed From J.S. Pope 5/8/03 1300				Received By/Stored In M. Hulstrom 5/8/03 1300					
Relinquished By/Removed From J.S. Pope 5/8/03 1415				Received By/Stored In R. Nickson 5/8/03 1415					
Relinquished By/Removed From R. Nickson 5/8/03 1415				Received By/Stored In J.A. 3728 5/8/03 1415					
Relinquished By/Removed From REF 1A 3728 5/8/03 1300				Received By/Stored In J.A. 3728 5/8/03 1300					
Relinquished By/Removed From J.A. 3728 5/8/03 1300				Received By/Stored In FED EX					
LABORATORY SECTION		Received By J.A. 3728 5/8/03 1300		Date/Time 5/14/03 11:35					
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By		Date/Time			

FH-Central Plateau Project		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					F03-006-72		Page 1 of 1		
Collector Johansen/Pope/Pfister		Company Contact LC Hulstrom		Telephone No. 373-3928		Project Coordinator TRENT, SJ		Price Code 8N		Data Turnaround 45 Days	
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling		Sampling Location 216-A-37 (C4106); (272.5'-275')		SAF No. F03-006		Air Quality <input type="checkbox"/>					
Ice Chest No. ERC 02 404		Field Logbook No. HNF-N-3361		COA 117504ES10		Method of Shipment Federal Express					
Shipped To RECRA EDERLINE SERVICES (Formerly TMA)		Offsite Property No. A030229		Bill of Lading/Air Bill No. SEE OSPL							
POSSIBLE SAMPLE HAZARDS/REMARKS Special Handling and/or Storage		Preservation	Cool 4C	Cool 4C	Cool 4C	None	None				
		Type of Container	aG	aG	aG	aG	aG				
		No. of Container(s)	1	1	1	1	1				
		Volume	120mL	60mL	120mL	60mL	60mL				
SAMPLE ANALYSIS		Chromium Hex - 7196	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item (1) in Special Instructions	Tritium - H3					
Sample No.	Matrix *	Sample Date	Sample Time								
B16W89	SOIL	5/8/03	1025	X	X	X	V				
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS			
Relinquished By/Removed From RECRA		Date/Time 5/8/03 1415		Received By/Stored In RECRA		Date/Time 5/8/03 1415		4/22/03 ** The laboratory is to achieve a detection limit of 50.0 pCi/g for Carbon-14. ** The laboratory is to report both kerosene and diesel range compounds from WTPH-D analysis. (1) Technetium-99; Strontium-89,90 - Total Sr; Isotopic Thorium (Thorium-232); Carbon-14; Iodine-129; Nickel-63; Neptunium-237 4/22/03 Personnel not available to relinquish samples from the 3728 Ref # 1A on 5/13/03			
Relinquished By/Removed From RECRA		Date/Time 5/8/03 1415		Received By/Stored In RECRA		Date/Time 5/8/03 1415					
Relinquished By/Removed From RECRA		Date/Time 5/13/03 1300		Received By/Stored In RECRA		Date/Time 5/13/03 1300					
Relinquished By/Removed From RECRA		Date/Time 5/13/03 1300		Received By/Stored In RECRA		Date/Time 5/13/03 1300					
Relinquished By/Removed From RECRA		Date/Time 5/14/03 0935		Received By/Stored In RECRA		Date/Time 5/14/03 0935					
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		Matrix *			
LABORATORY SECTION		Received By		Title		Date/Time				S=Soil SE=Soil SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue WI=Wipe L=Liquid V=Vegetation X=Other	
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By				Date/Time			

LIONVILLE LABORATORY INCORPORATED

SAMPLE RECEIPT CHECKLIST

CLIENT: TNU Hartford

Purchase Order/Project:

DATE: 5-14-03

AF# / SOW# / Release #: F03-006

Laboratory SDG #:

03051403

NOTE: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION

- | | | | | |
|--|---|-----------------------------|---|--|
| 1. Custody seals on coolers or shipping container intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 2. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 3. Airbill # recorded? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 4. All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 5. Sample containers are intact? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 7. All samples on coc received? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 8. All sample label information matches coc? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 10. Shipment meets LVLJ Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 11. Where applicable, bar code labels are affixed to coc? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 12. coc signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 13. coc will be faxed or emailed to client? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |
| 14. Project Manager/Client contacted concerning discrepancies? (name/date) | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment # |

Cooler # / temp (°C) and Comments:

ERC 02-404 / 1.2°

Laboratory Sample Custodian:

D. Fries

Laboratory Project Manager: